



ELSEVIER

Contents lists available at ScienceDirect

Learning, Culture and Social Interaction

journal homepage: www.elsevier.com/locate/lcsi

Promotion of school engagement through dialogic teaching practices in the context of a teacher professional development programme[☆]

Kati Vasalampi^{a,*}, Riitta-Leena Metsäpelto^b, Jenni Salminen^c,
Marja-Kristiina Lerkkanen^{b,d}, Marja Mäensivu^b, Anna-Maija Poikkeus^b

^a Department of Psychology, P. O. Box 35, 40014, University of Jyväskylä, Finland

^b Department of Teacher Education, P. O. Box 35, 40014, University of Jyväskylä, Finland

^c Department of Education, P. O. Box 35, 40014, University of Jyväskylä, Finland

^d Center for Learning Environment and Behavioral Research, University of Stavanger, 4036 Stavanger, Norway

ARTICLE INFO

Keywords:

Professional development
Dialogic teaching practices
School engagement
Situation-specific engagement
Observation

ABSTRACT

This study was conducted in the context of a teacher professional development programme that aimed to improve dialogic teaching in the classroom, and it describes the programme and examines the change in teachers' dialogic teaching practices and pupils' classroom engagement during the programme. Data on pupils' school engagement were collected using classroom video recordings and students' self-ratings at the end of the lesson including dialogic teaching practices. The participants comprised seven in-service teachers and their 140 pupils (10- to 15-year-olds) from two comprehensive schools. The findings indicated positive change in the use of dialogic teaching practices and in observed pupils' school engagement during the programme. Moreover, pupils' help-seeking during lessons increased over the course of the programme. The study suggests that a structured professional development programme utilising video recordings with teacher reflections provides beneficial tools for promoting teachers' employment of dialogic interaction and pupils' school engagement.

1. Introduction

In primary and lower secondary school, pupils' school engagement constitutes a critical component of the learning process: engaged pupils manifest high behavioural involvement, positive emotions and task motivation, whereas disengagement is associated with boredom, giving up learning tasks and pupil experiences as well as displays of negative emotions (Fredricks et al., 2004). Prior research indicates that school engagement is influenced by several contextual factors, including teacher classroom practices and the quality of the teacher–pupil relationship (Hamre et al., 2013; Hamre & Pianta, 2005; Resnick et al., 2015; Rimm-Kaufman et al., 2009). Furthermore, the literature has documented features of teacher–pupil interaction in particular elements of educational dialogue that scaffold pupils' active engagement in classroom discourse (Alexander, 2006; Skidmore, 2007). Despite the strong arguments for

[☆] Author note: This study was funded by the Academy of Finland's Research Programme on the Health and Welfare of children and young people (SKIDI-KIDS II, No. 263 891, 2013–2015), and other grants from the same funding agency (No. 299 506, 268 586, 292 466, 323 773).

* Corresponding author.

E-mail address: kati.vasalampi@jyu.fi (K. Vasalampi).

<https://doi.org/10.1016/j.lcsi.2021.100538>

Received 16 April 2021; Received in revised form 22 June 2021; Accepted 27 June 2021

Available online 7 July 2021

2210-6561/© 2021 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license

(<http://creativecommons.org/licenses/by/4.0/>).

beneficial effects of dialogic teaching practices on pupil participation and learning (Haneda, 2016; Muhonen et al., 2018), dialogic classroom discourse is still rare in classrooms across different age groups (Alexander, 2018; Howe & Abedin, 2013; Kutnick et al., 2002; Sedova et al., 2014; Smith et al., 2004). Moreover, while examples of professional development programmes seeking ways to affect teacher beliefs and practices (Wilkinson et al., 2017) and foster dialogue in small-group work (Mercer et al., 2013) are increasingly found in the literature, interventions focusing on promoting pupils' classroom engagement through dialogic teaching practices continue to be scarce (but see Hennessy et al., 2016; Sedova et al., 2016). The present study describes the key elements of an in-service professional development (PD) programme seeking to raise teacher awareness and skills in fostering classroom dialogue and pupils' engagement, and it investigates the impact of the PD programme on teachers' use of dialogic practices. Further, the study examines the change in pupils' engagement over the course of the programme.

1.1. Pupils' classroom engagement

School engagement refers to pupils' active participation in academic work, manifested through commitment and involvement in learning tasks (Fredricks et al., 2004). School engagement is typically defined as a multidimensional construct consisting of three major components: 1) behavioural engagement, such as participation and involvement in academic and social activities in the classroom; 2) emotional engagement encompassing pupils' sentiments toward school, such as feelings of enjoyment or interest, and 3) cognitive engagement, incorporating effort to comprehend complex ideas and master difficult skills (Fredricks et al., 2004). More recently, the concept of agentic engagement (Reeve, 2012) has been proposed, referring to pupils' active and agentic interaction in the classroom, that is, the extent to which pupils contribute to the flow of instruction and seek help from and ask questions of classmates and the teacher. Some researchers (e.g., Skinner et al., 2009) also include disaffection as a separate component of the construct of school engagement. Disaffection has been operationalised as lack of attention and as emotions that reflect enervated emotional states, such as tiredness and boredom, in contrast to emotional engagement capturing positive emotions, such as interest and enjoyment, reflecting energised emotional states (Skinner et al., 2009).

Previous research has produced strong empirical evidence that school engagement is an important predictor of pupils' school achievement (Fredricks et al., 2004). However, lower secondary school pupils, in particular, describe experiences in classrooms that are associated with disaffection and alienation from classroom activities (Roeser et al., 2000). It is thus important to increase understanding of the contextual and interactional factors, such as teacher–pupil educational dialogue that promote or impede pupils' classroom engagement. Examination of pupils' engagement experiences in classrooms has accumulated evidence of its situational variance from one learning situation to another (Martin et al., 2015; Vasalampi, Muotka, Malmberg, Aunola, & Lerkkanen, 2020). Consequently, recently growing attention has been focused on the need to capture real-time, situation-specific and instant (in-situ) experiences of pupils.

Measures based on observations of authentic or video-recorded classroom interaction have been shown to be a reliable and valid approach to assess pupils' classroom engagement (Pianta & Allen, 2008). The *CLASS-Secondary* (CLASS-S) assessment tool developed by Pianta et al. (2008), for instance, includes an observable dimension, which focuses on the extent to which pupils are being afforded and take up opportunities for active engagement and full participation through asking questions and sharing ideas, and which considers learning goals and the materials at hand. Observational tools are, however, only valid for assessing external manifestations of behavioural engagement. Internal dimensions of emotional and cognitive engagement are more difficult to capture reliably through external observation and some can only be known using self-reports. In the present study, both the CLASS-S observation tool and the recently developed *InSitu* Instrument (Vasalampi et al., 2016) assessing pupils' lesson-specific engagement via self-reports were used to collect information on pupils' engagement during the classroom lessons.

It is suggested that pupils' engagement in the classroom is fostered by high-quality interaction between the teacher and pupils (Resnick et al., 2015). Links between classroom interaction quality and pupils' engagement may be influenced, for instance, by the extent to which teaching practices afford motivating opportunities for pupils to be active and pursue meaningful, intrinsically interesting goals. It has been suggested that by engaging pupils in educational dialogue, the teacher challenges their thought processes and facilitates participation (Reznitskaya & Glina, 2013; Skinner & Belmont, 1993), which, in turn, satisfies the psychological needs of autonomy, competence, and relatedness (Reeve, 2012; Skinner et al., 2009). The classroom environment that satisfies one's basic psychological needs, also drives one's individual's motivational aspirations and goal setting. This suggestion has also received some empirical evidence. For example, through the use of the CLASS-S observations to analyse teacher–pupil interaction in their MyTeachingPartner PD programme, Pianta and colleagues (see Gregory et al., 2014; LoCasale-Crouch et al., 2018) have shown that increased use of dialogic teaching methods is associated with higher observed behavioural engagement. In another recent study, which utilised both observation methods and pupils' in-situ self-reports, Pöysä et al. (2019) demonstrated links between emotionally high quality teacher–pupil interaction and positive emotional engagement experiences among pupils during lessons.

1.2. Dialogic teaching practices

According to the five principles laid out by Alexander (2006), dialogic teaching should be collective, reciprocal, supportive, cumulative and purposeful, all the while with specific learning goals in mind. Thus, in dialogic teaching practices, pupils are invited and encouraged to participate in interaction and provided with open-ended questions, follow-up prompts and feedback, which challenge them to expand their thinking, to justify or clarify their opinions, and to draw connections to their own experiences (Alexander, 2006). In educational dialogue, pupils can collaboratively discuss topics drawn from real-life dilemmas, share their opinions and experiences and also jointly reflect upon them. Taking part in these kinds of participatory classroom activities is seen to foster a sense of belonging,

increase cohesion, and support subsequent productive dialogues (Alexander, 2006). Complementing Alexander's five principles presented above, Lefstein (2006) proposed that dialogue should also meet the criteria of being meaningful (teacher and pupils sharing their own views on a topic of mutual interest) and critical (identifying different points of view and related questions).

Classroom observation research indicates, however, that educational dialogue featuring active pupil participation through asking questions, explaining points of view and commenting on each other's ideas, continue to be rare (Lehesvuori et al., 2013; Pianta et al., 2012; Sedova et al., 2014). It has been estimated that, in primary school classrooms, about 85% of talk is initiated by the teacher (Mercer et al., 2009). Especially, whole-class situations typically consist of teacher-controlled talk in the form of scripted patterns of Initiation–Response–Feedback exchanges (IRF; Sinclair & Coulthard, 1975) containing teacher-initiated and mostly closed questions and an evaluation of the pupil's response. Mercer et al. (2009) argue that teachers should possess understanding and awareness of the patterns and functions of teacher–pupil talk in their classrooms and ways of scaffolding educational dialogue and pupils' active engagement. Thus, there is a clear need for professional development programmes that support teachers to develop dialogical approaches that extend beyond authoritative modes of teaching and teacher-led talk (Lehesvuori et al., 2013). In this study, we developed a PD model for in-service teachers consisting of a facilitated group workshop programme seeking to raise teacher awareness and skills in fostering classroom dialogue, pupils' engagement, and, subsequently, preventing disengagement.

1.3. Professional development as a means to increase dialogic teaching

Effective support for the professional development (PD) of in-service teachers is believed to induce changes in pedagogical content knowledge, teaching practices, and/or attitudes and beliefs related to learning and teaching (Clarke & Hollingsworth, 2002; Wilkinson et al., 2017). Current views indicate that effective elements of a professional development programme include joint construction of pedagogical knowledge and skills in collaboration with other teachers and the direct application of practices in classroom instruction (Penuel et al., 2007). Desimone (2009) argues that professional development is most effectively facilitated by active learning, that is, through opportunities to observe other teachers, or one's own teaching being observed, and followed with interactive feedback, reflection and discussion. The participatory methods can include, for example, the use of video recordings documenting participants' interactions in classrooms, and joint reflection with expert coaches (Allen et al., 2011; see also Hennessy et al., 2016; Sedova et al., 2016). Video recordings and their reflective use provide the means to help participants learn to notice subtle features in classroom interaction and in their own behaviour, and, thus, to practice and sharpen their professional vision (Sherin & van Es, 2005).

Video recordings can also be used to evaluate changes in dialogical interactions in the classroom during a PD programme, as implemented by Sedova et al. (2016). Within the CLASS-S framework, video recordings are utilised to assess a wide range of dimensions of educational dialogue. One of the dimensions concerns the *quality* of dialogical interactions in the classroom, which is assessed with respect to three behavioural markers. The first indicator aims to capture the extent of cumulative and purposeful content-focused interaction between the teacher and pupils (i.e., cumulative content-driven exchanges). The second behavioural marker focuses on the balance of the distribution of pupil and teacher talk, as well as on opportunities for and evidence of pupils taking an active role in interaction (i.e., distributed talk). Finally, the third indicator focuses on the use of strategies that facilitate extended interaction, such as elaboration on a topic and chains of reciprocal exchanges (i.e., facilitation strategies). The present study took place in the context of a PD programme that was developed to support teachers' use of dialogical teaching practices in the classroom, and its effects on teacher practices were assessed utilising the CLASS-S observational assessment tool.

1.4. The aim of the study

The present study was conducted in the context of a PD model designed to improve teacher competence in dialogic teaching, and, further, to promote dialogic interactional practices and to contribute to pupils' engagement. The aims of the study were to analyse the impact of the PD programme on the dialogic interaction within the participating classrooms, and further, to study the change in pupils' engagement during the programme. Thus, we examined, first, to what extent there were the differences in *dialogical interaction* and *classroom-level pupils' engagement* (based on CLASS-S observational ratings) between the baseline lesson and a lesson after exposure to the PD workshops promoting the use of dialogic teaching. Second, we examined to what extent there were differences *pupils' self-reports of their lesson-specific engagement* (i.e., behavioural engagement, emotional engagement, disaffection, competence experiences, and help-seeking) as assessed with in-situ self-ratings between the baseline lesson and a lesson after exposure to the PD workshops promoting the use of dialogic teaching practices.

2. Method

2.1. Participants

The sample consisted of seven teachers and 140 pupils from Grades 4 to 9 (10- to 15-year-olds) of two comprehensive schools. The sample recruited participated on a voluntary basis. The school principals were approached first. After the principal's initial consent to participate in the study, the principal suggested teachers that could be contacted by the researchers for interest in participation and further information (School B), and the researchers visited the school in order to provide information about the study to the school's personnel and teachers who expressed a willingness to participate in the PD programme (School A). One of the schools was located in Central Finland, in a rural municipality, and the other in Southern Finland, in a mid-sized town. The PD programmes were conducted during the school years 2014–2015 and 2015–2016. The participants in School A included four teachers and 84 pupils: one class

teacher of Grade 4 pupils (25 pupils; mode age 10 years), one class teacher of Grade 5 pupils (20 pupils; mode age 11 years), and two subject teachers of Grade 8 pupils (22 and 17 pupils respectively; mode age 14 years). The participants in School B included three teachers and 56 pupils: one class teacher of Grade 6 pupils (23 pupils; mode age 12 years), one subject teacher of Grade 7 pupils (14 pupils; mode age 13 years), and one subject teacher of Grade 8 pupils (19 pupils; mode age 14 years). All teachers (3 male, 4 female) provided written consent for their participation in the PD programme, and families of the pupils in their classrooms were also asked to provide written consent for their child's participation. The four subject teachers taught the mother tongue and literacy (two teachers) and math, chemistry and physics (two teachers). In Finland, Grades 1 through 6 comprise the primary grades, which is when class teachers teach most of the subjects in "home" classrooms. Grades 7 through 9 form the lower secondary grades of the comprehensive school, where pupils are taught by subject teachers.

The PD programme was purposefully targeting both primary school classroom teachers (from Grades 4, 5 and 6) and subject teachers teaching lower secondary school pupils (from Grades 7 and 8). The goal was to create opportunities for collaboration and sharing of knowledge and experiences among teachers with different teaching profiles, and to strengthen pedagogical awareness and means to support the engagement of pupils, particularly those undergoing the transition from primary to secondary school. In the lower secondary grades, the pupil group comprising the class is fixed for most of the subjects (i.e., the pupils form a class that remains together for the three years). The lower secondary school subject teachers who participated in the PD programmes were asked to select one of the classes that they taught as the target group of this programme, in which classroom video recordings and dialogic lessons were then carried out.

2.2. Procedure

The programme was carried out by two researchers, both with a Master's degree in Psychology and a PhD in Educational Psychology. The researchers in charge of the implementation of the programme worked as a team and were both present in all teacher group meetings.

The design and contents of the programme is presented in Table 1. In developing the conceptual framework and designing the model for the PD programme structure and workshop contents we utilised prior literature and our extensive experience of classroom observation studies and analysis of student-teacher interaction and classroom dialogue at different age levels. Some of the main sources that contributed to the programme design and selection of contents were the Classroom Assessment Scoring System dimensions (e.g., in CLASS-S; Pianta et al., 2008), and the Teaching Through Interaction (TTI; Hamre et al., 2013) framework delineating their the conceptual underpinnings, MyTeachingPartner intervention (Pianta, Mashburn, et al., 2008); and the Thinking together programme for developing exploratory talk in primary classrooms (Dawes et al., 2000). The principles, examples and evidence from these sources and videotapes formed the core of the workshops along with the excerpts from the participants' lessons. The PD programme did not provide teachers with a prescribed model or manual in how to lead dialogue and orchestrate interaction among pupils but they were given material for each of the workshop meetings and articles and the group discussion involved generation of joint ideas for future lessons in order to increase dialogue and student participation. Therefore, workshop practices were intended to aid teachers in noticing subtle features in their classroom interactions and, thus, to practice and sharpen their professional vision. Concrete examples for different concepts (e.g., expanding student initiatives, reinforcing follow-up loops, using open ended questions, providing contingent feedback) were selected from videos from teachers' own lessons by the researchers. Joint discussion among teacher peers about examples in relation to concepts used in the PD programme was used as a platform for generating guidance on how to maintain productive dialogue in the classroom and contributing to potential changes in the participants' beliefs on the role and opportunities of fostering student dialogue in whole classroom situations.

In School A, the teachers took part in five workshops, each lasting 90 min, and in School B the teachers took part in seven workshops, each lasting 45 min. In the workshops, the teachers were introduced to the concepts of school engagement and motivation, dialogical teaching practices, dimensions of classroom quality (CLASS-S), key features of teacher-pupil relationships, and effective feedback. These concepts and their manifestations in authentic classroom situations, as well as the participating teachers' experiences and ideas, were jointly discussed. Classroom lessons during the programme of each participating teacher were video recorded and pupils' self-ratings of their engagement were also collected in those lessons. Excerpts of video recordings of the teachers' lessons were

Table 1
Design and contents of the PD programme.

Time	Type	Content
September	Workshop 1	Student engagement and motivation
September	Video-recording 1 and InSitu student ratings	Baseline lesson
October	Workshop 2	Dialogic teaching practices Reflection on video clips
October	Video-recording 2 and InSitu student ratings	Dialogic teaching practice 1
November	Workshop 3	Quality of feedback Reflection on video clips
November	Video-recording 3 and InSitu student ratings	Dialogic teaching practice 2
December	Workshop 4	Teacher-student interaction and feedback Reflection on video clips
January	Workshop 5	Teachers' experiences of the programme, evaluation and setting future goals

shown and discussed in the workshops in order to support self-reflection on teacher practices and classroom interaction. Small clips (2 to 3 min) of the video-recorded lessons of each participating teacher's lessons were pre-selected by the researchers, and they were shown in the subsequent workshop meetings and reflected upon with the participants. The clips that were mostly positive examples of teacher practices were selected on the basis of relevance to the topic discussed, both in order to stimulate joint reflection of used practices and to provide teachers concrete feedback.

Data collection procedure in the classrooms. For the present study we analysed one lesson constituting the baseline at the beginning of the programme. This lesson was based on the teachers' own choice and the teachers were asked to implement a typical whole class lesson. We analysed also one lesson during which they were asked to implement some of the principles and practices of dialogic teaching with the aim of increasing pupils' participation and engagement in the lessons. Because of this pre- and post-assessment design, Workshop 1 (taking place before the baseline video recording) did not involve any material related to dialogical teaching practices. In the next video recordings, the teachers were asked to include dialogical elements in their lessons (group work, collaborative projects, small group discussions and participatory strategies that were modelled in the workshops). These video-recorded lessons also involved pupil self-ratings of their engagement. Each pupil rated his or her lesson-specific experiences of behavioural and emotional engagement, disaffection, competence experiences, and help-seeking; this was conducted using mobile technology, filling in an electronic questionnaire. Ratings took approximately 2–3 min per pupil and were carried out immediately at the end of each lesson. It is noteworthy, that the video recordings and the data regarding pupil's engagement were collected for a resource of implementation of the programme as well as its assessment, rather than explore the impact of the full programme.

2.3. Measures

2.3.1. Observed quality of dialogic teaching

The quality of dialogic teaching was assessed according to one of the dimensions of the Classroom Assessment Scoring System for Secondary Education (CLASS-S; Pianta et al., 2008). The CLASS-S includes 12 dimensions rated on a 7-point scale measuring the teacher–child interaction quality: low (1–2), moderate (3–5), or high (6–7). In the present study, changes from the baseline lesson to the lesson where teachers implemented dialogic teaching practices were analysed using the CLASS-S dimension of *Instructional dialogue*. This dimension includes three behavioural markers capturing teachers' dialogic teaching quality observable in the context of a classroom lesson: 1) whether teachers use cumulative content-driven exchanges including cumulative questioning and discussion that guide and prompt pupils, 2) to extent to which teachers support distributed talk across all of the pupils in the class, and 3) whether teacher use strategies that facilitate pupils' understanding or content and language development. For the purpose of our study, that dimension score of the CLASS-S (Instructional dialogue) was renamed *Dialogic teaching* (emphasising the goal of the programme being support for teacher competence growth in this area).

2.3.2. Observed classroom engagement

Changes in classroom-level engagement from the baseline lesson to the lesson featuring dialogic teaching practices were analysed according to the CLASS-S (Pianta et al., 2008) *Student engagement* dimension. In this dimension the observer focuses only on pupils' behaviour, in contrast to dialogic teaching quality, in which the observer focuses on teacher's behaviour (Pianta et al., 2008). Student engagement dimension measures the degree to which pupils in the class are actively focused on and participating in the learning activity versus being passive, distracted or disengaged during the lesson. Its behavioural indicators focus on both observable signs of active engagement (e.g., responding, asking questions, sharing ideas, lack of being off-task) and sustained engagement. The score reflects the extent to which most pupils are actively engaged in classroom discussions and activities, are on task and focused on class-related goals, and demonstrate sustained engagement, or, contrastingly, whether some or many pupils appear distracted, disengaged or passive for extended periods of time throughout the examined lesson. This coding, which was conducted as part of the normal protocol of CLASS-S coding, was focused on the level of overall behavioural engagement observed across pupils in the classroom.

In applying the CLASS-S assessment, the video-recorded lessons ($n = 14$) were divided into three cycles of about 15 min in duration of which each was rated according to the CLASS-S manual. All codings were conducted by one trained observer, who was not involved with the implementation of the PD programme or the present study, and who was 'blind' as to the status of the lessons, that is, not knowing whether the observed lesson was the video-recorded baseline lesson or a lesson from the phase when teachers implemented dialogic teaching practices. In order to evaluate changes during the intervention, mean scores averaged across the three cycles within each lesson were used in the analysis.

2.3.3. Pupils' lesson-specific engagement

Pupils' lesson-specific experiences of their engagement were assessed using the InSitu Instrument (Vasalampi et al., 2016). The InSitu includes 17 items that are rated with a 5-point scale (1 = not at all; 5 = very much). The dimensions with Cronbach's Alpha internal reliabilities were as follows: 1) *behavioural engagement* (7 items, $\alpha_1 = 0.77$, $\alpha_2 = 0.77$, $\alpha_3 = 0.77$, e.g., "How persistent were you in studying during this lesson?"); 2) *emotional engagement* (3 items, $\alpha_1 = 0.83$, $\alpha_2 = 0.84$, $\alpha_3 = 0.88$, e.g., "How much did you like this lesson?"); 3) *disaffection* (3 items, $\alpha_1 = 0.66$, $\alpha_2 = 0.64$, $\alpha_3 = 0.65$, e.g., "How boring was the lesson?"); 4) *competence experiences* (2 items, $\alpha_1 = 0.60$, $\alpha_2 = 0.73$, $\alpha_3 = 0.56$, e.g., "How well did you understand what was taught?"); and 5) *help-seeking* from other pupils or the teacher (2 items, $\alpha_1 = 0.79$, $\alpha_2 = 0.57$, $\alpha_3 = 0.63$, "How much did you ask for help from the teacher/another adult/your classmates during the lesson?"). The factor scores of these five dimensions of pupils' lesson-specific engagement were used in our analyses.

2.4. Statistical analyses

Paired sample *t*-tests were used to examine differences regarding the quality of dialogic teaching and classroom engagement/pupils' experiences of engagement between the baseline lesson and a lesson featuring dialogic teaching practices. Because of the small sample size, the results were confirmed using the nonparametric Wilcoxon signed-rank test. All analyses were carried out using the SPSS statistical package.

3. Results

The first aim of the present study was to examine whether observed dialogic teaching (as indicated by the CLASS-S scores) was higher in a lesson when the teacher was asked to employ dialogic teaching practices compared to the baseline lesson at the beginning of the programme. The results of a paired samples *t*-test indicated a trend toward a statistically significant difference between lessons ($t(6) = -2.20, p = .070$, Cohen's $d = 0.83$) in the direction of slightly more dialogic teaching having taken place in a lesson for which relevant practice was conducted during the programme ($M2 = 3.90, SD = 1.10$) than in the prior baseline lesson ($M1 = 2.90, SD = 0.74$). This finding was in line with the Wilcoxon signed-rank test ($Z = -1.78, p = .074$). It is important to note that, due to the small sample size, the result was not statistically significant although the effect size was large (>0.80).

The second aim was to examine whether observed classroom engagement (as indicated by the CLASS-S scores) was higher in a lesson when the teacher was asked to employ dialogic teaching practices than during the baseline lesson. The results show that the observed classroom engagement was significantly higher in the lesson video recorded during the programme phase than at the start, in the baseline lesson ($t(6) = -2.64, p = .039$, Cohen's $d = 1.00$; $M1 = 4.76, SD = 0.25$; $M2 = 5.38, SD = 0.62$). The results were confirmed with the Wilcoxon signed-rank test ($Z = -2.05, p = .041$). Thus, the statistically significant finding and the large effect size (>0.80) indicated that the classroom engagement increased over the course of the programme.

Next, we examined whether pupils' lesson-specific experiences of engagement changed over the course of the teachers' PD programme. The analyses were conducted separately for each engagement dimension, that is, regarding behavioural engagement, emotional engagement, disaffection, competence experiences, and help-seeking. The results pertaining to self-reports indicated that pupils' self-rated behavioural engagement was significantly lower regarding the lesson featuring dialogic teaching practices compared to the baseline lesson at the beginning of the programme ($t(115) = 2.08, p = .04$, Cohen's $d = 0.19$; $M1 = 3.59, SD = 0.61$; $M2 = 3.47, SD = 0.66$). Similarly, pupils' competence self-ratings were higher regarding the baseline lesson than for the lesson involving dialogic teaching ($t(115) = 2.54, p = .01$, Cohen's $d = 0.23$; $M1 = 4.13, SD = 0.72$; $M2 = 3.95, SD = 0.80$). In contrast, pupils' help-seeking from other students and the teacher was higher in the lesson involving dialogic teaching practices than in the baseline lesson ($t(115) = -2.17, p = .03$, Cohen's $d = 0.20$; $M1 = 1.69, SD = 0.81$; $M2 = 1.89, SD = 0.83$). The analyses of emotional engagement or disaffection did not indicate significant difference between the baseline lesson and the lesson featuring dialogic teaching practices.

4. Discussion

The present study was conducted in the context of a teacher professional development (PD) programme, focusing on dialogic teaching and with the aim of examining the impact of the programme on improving dialogical interaction. Change in teachers' dialogic teaching practices was assessed by an external observer. Furthermore, the external observer evaluated pupils' behaviour during a lesson when the teacher tried out dialogic teaching practices and during a baseline lesson, although the pupils did not know about the content of the PD programme. Finally, 140 pupils attending the lessons of the participating teachers rated their own engagement experiences in pre-test and post-test lessons. The results indicate changes toward higher classroom engagement in observed patterns of teacher–student interaction through teachers' exposure to dialogical practices and implementing them in their lessons. However, the direction of the changes in pupils' self-ratings of lesson-specific engagement depended on the dimension in question.

The main finding of the observational analyses indicates that a change took place, after the baseline lesson, toward an observed higher quality of classroom engagement among pupils in the class, and a slight – albeit not statistically significant – trend of increase in dialogical teaching as rated by an external observer. This suggests that reflective workshops with discussions aided through the use of video recordings can be beneficial in supporting teachers in implementing more participatory and engaging methods of instruction (see also Sedova et al., 2016). It is important to note, however, that teachers' encouragement of pupils is critical for ensuring engagement in productive educational dialogue (Muhonen et al., 2016). It has been argued that teachers have a relatively modest awareness of and skills in using practices of educational dialogue and productive exploratory talk in their teaching (Mercer et al., 2009; Sedova et al., 2014). Thus, both evidence-based information and guidance on how to maintain a productive dialogue in the classroom are needed. This was also the conclusion drawn by Gregory et al. (2014) in their study, which indicated that when teachers are provided opportunities to learn about dialogic teaching practices they gain confidence and expertise in actively facilitating pupil involvement.

The finding of an increase in observed classroom-level engagement from the baseline lesson to the lesson for which teachers had received exposure to the principles of dialogic teaching suggests a promising effect in the direction of the intended goal of promoting teacher sensitivity for and skills in dialogic interaction and fostering active and sustained engagement among pupils. It is noteworthy that this effect was documented in the absence of prescribed set models or a manual of detailed instructions of how to lead dialogue and orchestrate interaction among pupils. This seems to speak for an authentic change in thinking and pedagogical awareness as well as for the empowerment of teachers' own thinking through guidance in different ways of implementing productive dialogue with the help of videos and through the sharing of ideas, arguments and counterarguments in collegial dialogue. Our finding can be cautiously taken to suggest that the participating teachers had, through this reflective work, become sensitised to the key aspects at the core of the

programme, that is, ways to motivate and scaffold active engagement among pupils, and they were willing and able to implement those aspects in their own chosen manner in the classrooms. Thus, we would make the argument (see also Sedova et al., 2016), that mentoring with scaffolded use of video recordings to reflect on one's practices together with other teachers is an effective tool for teachers' professional development. The feedback from the participating teachers – although not analysed in the present study – corroborated that the sharing of video-recorded excerpts of their own teaching practices in the classroom, as well as observing the engagement patterns of another teacher's pupils, was experienced by the teachers as providing powerful new insights.

The findings collected through pupils' in-situ self-ratings show that the effects of teacher participating in the PD programme, and the changes in teaching practices it brought about, were also, to some extent, reflected in pupils' lesson-specific engagement experiences, although they did not know about the content of the programme. Somewhat unexpectedly, the findings also show that pupils' self-ratings of behavioural engagement and competence experiences were lower during the lesson when the teachers tried out and implemented dialogic teaching practices than in the baseline lesson at the beginning of the programme. This is interesting, because the external observer, who observed pupils' behaviour in the same lesson, found them to be significantly more active than in baseline lesson. It is possible that dialogic teaching practices requiring pupils to be active in novel ways may have been experienced as challenging or taxing by some pupils and that this was reflected in their ratings of their competence and behavioural engagement. This is in line with study by Reznitskaya and Glina (2013), which showed that despite the extensive preparation of classroom dialogues and experience of teachers, all students did not find participation comfortable. As Reznitskaya and Glina (2013) argued, not all students may naturally understand the responsibilities of being a learner in a dialogic classroom. Students need to be taught, for example, to work with each other's opposing viewpoints, as they engage in collaborative meaning-making and build more comprehensive understanding of complex questions. However, the findings also indicate that during the lesson involving dialogical teaching practices, pupils sought more help from the teacher and other pupils than during the baseline lesson. This suggests that teachers' active attempt to increase dialogical discussion activated pupils to ask for help more often in their learning. This result can have two possible explanations. First, it is possible that the more interactive modes of learning, open problem-solving tasks, and sharing of ideas and opinions may have caused some confusion, and that pupils therefore felt a stronger need to ask for help than in the more traditional scripted and predictably orchestrated baseline lesson. Second, it is also possible that the dialogic teaching methods advocated in the programme (such as open-ended questions and extended feedback) opened a space for pupils' talk and encouraged them to ask more questions about the studied content. It can be argued that pupils who ask for help in the classroom are more active in their learning, and help-seeking can facilitate their active participation in the classroom.

This study has some limitations that should be considered. The small sample size is a major limitation of the study. Analyses of the present study should be replicated with a larger sample before generalising the results. Moreover, a control group consisting of teachers who are not participants in a PD programme would be beneficial for untangling the effects of the different aspects of the programme. As the participating schools and teachers represent only a small subsample of grades and subjects, there may be biases or selection effects that would need to be controlled for in future studies when using larger samples. Furthermore, the observational data were collected at one time point at the beginning of the programme as pre-assessment and at one time point during the programme as post-assessment. The data collection of video recordings during the course of the programme was carried out in order to provide a key resource for the programme as well as for its assessment. The data allowed examination of differences between a lesson including dialogic practices and a typical lesson, but analysis of the impact of the full programme on students' engagement would optimally include a several time points paced across time. This will be an important task of future studies, particularly because pupils reported lower levels of engagement in the lesson recorded during the programme than in the pre-programme baseline assessment. Examining pupils' self-reported experiences as well as their observed behaviour as they become used to the changes in the teachers' practice would provide relevant information on understanding the determinants of sustainable effects on teacher's adoption of classroom dialogue and students' response to these changes. Moreover, observations from several lessons would provide opportunity for stronger arguments about a change in teacher's teaching practices, as they may vary across lessons. However, each video recorded lesson was divided into three cycles which were observed and rated separately, and the mean of these rating were used as the final observational data. Therefore, the used assessment captures some of the variation within teachers. Furthermore, teachers chose themselves a typical whole class lesson for a baseline lesson and therefore, it can be assumed that a chosen baseline lesson was "the best typical lesson a teacher could provide". Such research design should rather weaken than enhance the difference between pre-test and post-test assessments. Finally, in the post-test lesson, teachers taught the same pupils as they did in the baseline lesson and the time period between pre-test and post-test assessments was only one month. Thus, it can be assumed that the significant difference between pre-test and post-test assessment is partly associated with the PD programme available to teachers.

Despite these limitations, the present study contributes to the literature on professional development by providing information on programme effectiveness and ways of evaluating pupil engagement and participation in educational dialogue in classrooms. The findings of the present study suggest that a PD programme utilising video recordings in a group workshop format is a feasible tool for teachers fostering their competences with respect to promoting dialogue and engagement in their classroom as well as developing their pedagogical awareness of the effective types and benefits of dialogic teaching.

5. Conclusion

These findings provide preliminary support to the idea that promoting teachers' awareness of dialogic teaching supports their use of these practices in classrooms, which, in turn, can contribute positively to pupils' classroom engagement.

References

- Alexander, R. J. (2006). *Towards dialogic teaching: Rethinking Classroom Talk* (3rd ed., p. 57). New York: Diálogos.
- Alexander, R. J. (2018). Developing dialogic teaching: Genesis, process, trial. *Research Papers in Education*, 33, 561–598. <https://doi.org/10.1080/02671522.2018.1481140>.
- Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science*, 333, 1034–1037. <https://doi.org/10.1126/science.1207998>.
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18, 947–967. [https://doi.org/10.1016/S0742-051X\(02\)00053-7](https://doi.org/10.1016/S0742-051X(02)00053-7).
- Dawes, L., Mercer, N., & Wegerif, R. (2000). *Thinking together: A programme of activities for developing speaking, listening and thinking skills for children aged 8–11*. Imaginative Minds Ltd.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38, 181–200. <https://doi.org/10.3102/0013189X08331140>.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59–109. <https://doi.org/10.3102/00346543074001059>.
- Gregory, A., Allen, J. P., Mikami, A. Y., Hafen, C. A., & Pianta, R. C. (2014). Effects of a professional development program on behavioral engagement of students in middle and high school. *Psychology in the Schools*, 51, 143–163. <https://doi.org/10.1002/pits.21741>.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first grade classroom make a difference for children at risk of school failure? *Child Development*, 76, 949–967. <https://doi.org/10.1111/j.1467-8624.2005.00889.x>.
- Hamre, B. K., Pianta, R. C., Downer, J. T., DeCoster, J., Mashburn, A. J., Jones, S. M., ... Hamagami, A. (2013). Teaching through interactions: Testing a developmental framework of teacher effectiveness in over 4,000 classrooms. *The Elementary School Journal*, 113, 461–487. <https://doi.org/10.1086/669616>.
- Haneda, M. (2016). Dialogic learning and teaching across diverse contexts: Promises and challenges. *Language and Education*, 31, 1–5. <https://doi.org/10.1080/09500782.2016.1230128>.
- Hennessy, S., Rojas-Drummond, S., Higham, R., Torreblanca, O., Barrera, M. J., Marquez, A. M., ... Ríos, R. M. (2016). Developing an analytic coding scheme for classroom dialogue across educational contexts. *Learning, Culture and Social Interaction*, 9, 16–44. <https://doi.org/10.1016/j.lcsi.2015.12.001>.
- Howe, C., & Abedin, M. (2013). Classroom dialogue: A systematic review across four decades of research. *Cambridge Journal of Education*, 43, 325–356. <https://doi.org/10.1080/0305764X.2013.786024>.
- Kutnick, P., Blatchford, P., & Baines, E. (2002). Pupil groupings in primary school classrooms: Sites for learning and social pedagogy? *British Educational Research Journal*, 28, 187–206. <https://doi.org/10.1080/01411920120122149>.
- Lefstein, A. (2006). *Dialogue in schools: Towards a pragmatic approach (working papers in urban language and literacies, #33)*. King's College London.
- Lehesvuori, S., Viiri, J., Rasku-Puttonen, H., Moate, J., & Helaakoski, J. (2013). Visualizing communication structures in science classrooms: Tracing cumulativeness in teacher-led whole class discussions. *Journal of Research in Science Teaching*, 50, 912–939. <https://doi.org/10.1002/tea.21100>.
- LoCasale-Crouch, J., Jamil, F., Pianta, R. C., Rudasill, K. M., & DeCoster, J. (2018). Observed quality and consistency of fifth graders' teacher-student interactions: Associations with feelings, engagement, and performance in school. *SAGE Open*, 1–11. <https://doi.org/10.1177/2158244018794774>.
- Martin, A. J., Papworth, B., Ginns, P., Malmberg, L.-E., Collie, R. J., & Calvo, R. A. (2015). Real-time motivation and engagement during a month at school: Every moment of every day for every student matters. *Learning and Individual Differences*, 38, 26–35. <https://doi.org/10.1016/j.lindif.2015.01.014>.
- Mercer, N., Dawes, L., & Staarman, J. K. (2009). Dialogic teaching in the primary science classroom. *Language and Education*, 23, 353–369. <https://doi.org/10.1080/09500780902954273>.
- Mercer, N., Wegerif, R., & Dawes, L. (2013). Children's talk and the development of reasoning in the classroom. *British Educational Research Journal*, 25, 95–111. <https://doi.org/10.1080/0141192990250107>.
- Muhonen, H., Pakarinen, E., Poikkeus, A. M., Lerkkanen, M. K., & Rasku-Puttonen, H. (2018). Quality of educational dialogue and association with students' academic performance. *Learning and Instruction*, 55, 67–79. <https://doi.org/10.1016/j.learninstruc.2017.09.007>.
- Muhonen, H., Rasku-Puttonen, H., Pakarinen, E., Poikkeus, A.-M., & Lerkkanen, M.-K. (2016). Scaffolding through dialogic teaching in early school classrooms. *Teaching and Teacher Education*, 55, 143–154. <https://doi.org/10.1016/j.tate.2016.01.007>.
- Penuel, W. R., Fishman, B. J., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal*, 44, 921–958. <https://doi.org/10.3102/0002831207308221>.
- Pianta, R., & Allen, J. P. (2008). Building capacity for positive youth development in secondary school classrooms: Changing teachers' interactions with students. In M. Shinn, & H. Yoshikawa (Eds.), *Toward positive youth development: Transforming schools and community programs* (pp. 21–39). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195327892.003.0002>.
- Pianta, R. C., Mashburn, A., Downer, J., Hamre, B., & Justice, L. (2008). Effects of web-mediated professional development resources on teacher-child interactions in pre-kindergarten classrooms. *Early Childhood Research Quarterly*, 23, 431–451. <https://doi.org/10.1016/j.ecresq.2008.02.001>.
- Pianta, R. C., Hamre, B. K., & Allen, J. P. (2012). Teacher-student relationships and engagement: Conceptualizing, measuring, and improving the capacity of classroom interactions. In S. L. Christenson, & A. L. Reschly (Eds.), *Handbook of research on student engagement* (pp. 365–386). Springer. https://doi.org/10.1007/978-1-4614-2018-7_17.
- Pianta, R. C., Hamre, B. K., Hayes, N., Mintz, S., & LaParo, K. M. (2008). *Classroom Assessment Scoring System – Secondary (CLASS-S)*. Charlottesville, VA: University of Virginia.
- Pöysä, S., Vasalampi, K., Muotka, J., Lerkkanen, M.-K., Poikkeus, A.-M., & Nurmi, J.-E. (2019). Teacher-student interaction and lower secondary school students' situational engagement. *British Journal of Educational Psychology*, 89, 374–392. <https://doi.org/10.1111/bjep.12244>.
- Reeve, J. (2012). A self-determination theory perspective on student engagement. In S. L. Christenson, & A. L. Reschly (Eds.), *Handbook of research on student engagement* (pp. 149–172). Springer. https://doi.org/10.1007/978-1-4614-2018-7_7.
- Resnick, L. B., Asterhan, C. S. C., & Clarke, S. N. (Eds.). (2015). *Socializing intelligence through academic talk and dialogue*. American Educational Research Association.
- Reznitskaya, A., & Glina, M. (2013). Comparing student experiences with story discussions in dialogic versus traditional settings. *The Journal of Educational Research*, 106, 49–63. <https://doi.org/10.1080/00220671.2012.658458>.
- Rimm-Kaufman, S. E., Curby, T. W., Grimm, K. J., Nathanson, L., & Brock, L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology*, 45, 958–972. <https://doi.org/10.1037/a0015861>.
- Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (2000). School as a context of early adolescents' academic and social-emotional development: A summary of research findings. *The Elementary School Journal*, 100, 443–471. <https://doi.org/10.1086/499650>.
- Sedova, K., Salamounova, Z., & Svaricek, R. (2014). Troubles with dialogic teaching. *Learning, Culture and Social Interaction*, 3, 274–285. <https://doi.org/10.1016/j.lcsi.2014.04.001>.
- Sedova, K., Sedlacek, M., & Svaricek, R. (2016). Teacher professional development as a means of transforming student classroom talk. *Teaching and Teacher Education*, 57, 14–25. <https://doi.org/10.1016/j.tate.2016.03.005>.
- Sherin, M., & van Es, E. (2005). Using video to support teachers' ability to notice classroom interactions. *Journal of Technology and Teacher Education*, 13, 475–491.
- Sinclair, J. M., & Coulthard, R. M. (1975). *Towards an analysis of discourse: The English used by teachers and pupils*. Oxford University Press.
- Skidmore, D. (2007). Pedagogy and dialogue. *Cambridge Journal of Education*, 36, 503–514. <https://doi.org/10.1080/03057640601048407>.
- Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology*, 85, 571–581. <https://doi.org/10.1037/0022-0663.85.4.571>.
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement and disaffection. Conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement*, 69, 493–525. <https://doi.org/10.1177/0013164408323233>.

- Smith, F., Hardman, F., Wall, K., & Mroz, M. (2004). Interactive whole class teaching in the national literacy and numeracy strategies. *British Educational Research Journal*, 30, 395–411. <https://doi.org/10.1080/01411920410001689706>.
- Vasalampi, K., Muotka, J., Malmberg, L.-E., Aunola, K., & Lerkkanen, M.-K. (2020). Intra-individual dynamics of lesson-specific engagement: Lagged and cross-lagged effects from one lesson to the next. *British Journal of Educational Psychology*. <https://doi.org/10.1111/bjep.12404>.
- Vasalampi, K., Muotka, J., Pöysä, S., Lerkkanen, M.-K., Poikkeus, A.-M., & Nurmi, J.-E. (2016). Assessment of students' situation-specific classroom engagement by an InSitu Instrument. *Learning and Individual Differences*, 52, 46–52. <https://doi.org/10.1016/j.lindif.2016.10.009>.
- Wilkinson, I. A. G., Reznitskaya, A., Bourdage, K., Oyler, J., Glina, M., Drewry, R., ... Nelson, K. (2017). Toward a more dialogic pedagogy: Changing teachers' beliefs and practices through professional development in language arts classrooms. *Language and Education*, 31, 65–82. <https://doi.org/10.1080/09500782.2016.1230129>.