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The quality of an expert teacher's and a student teacher's pedagogical interactions in early childhood education and care examined through the CLASS lens

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ABSTRACT: High-quality interactions between teachers and children in early childhood education and care (ECEC) are at the heart of supporting children's development, well-being, and learning. The aim of the study was to examine the quality of an experienced ECEC teacher's and an ECEC student teacher's teacher–child interactions using the Classroom Assessment Scoring System (CLASS). Furthermore, the study explored the participants' reflections on their pedagogical interactions and the extent to which they aligned with the CLASS framework. The data consisted of video recordings, written observation notes, and stimulated recall interview (SRI) transcripts. The videos were rated according to the CLASS manual, and the data were analysed using qualitative thematic analysis. The results suggested that participants' teacher–child interactions were of relatively high quality, although instructional support was an area for development. However, the interactions of the student teacher varied across observation cycles. In the SRIs, both participants emphasised the importance of emotional support and supporting children's language skills. Differences arose in the participants' positioning toward teacher identity: the ECEC teacher as expert and the student teacher as developing a professional identity. The results provide novel qualitative insights into teacher–child interactions and using

CLASS tool in combination to teachers' self-reflections regarding their interactions with the children.

Keywords: *quality of interactions, ECEC teacher, ECEC student teacher, pedagogy, reflection*

Introduction

Early childhood education and care (ECEC) is a significant out-of-home context in which many children below the age of seven years spend time daily (European Commission/EACEA/Eurydice, 2019). The features of high-quality early childhood education have interested researchers in recent decades (Burchinal et al., 2008; Cadima et al., 2010; Hamre, 2014; Pianta et al., 2005; von Suchodoletz et al., 2014), and strengthening the quality of ECEC has been prioritised (see European Commission, 2019). ECEC quality has been conceptualised as comprising the structural and process features (European Commission, 2014) that together influence children's well-being and other outcomes—in particular, the quality of teacher–child interactions (Burchinal et al., 2008; Curby et al., 2009; Mashburn et al., 2008; Perlman et al., 2016). Teachers,[1] play a key role in engaging children in meaningful interactions in ECEC, consequently supporting their well-being, development, and learning (McNally & Slutsky, 2018). In Finland, ECEC depends heavily on teachers' professionalism (Act on Early Childhood Education and Care, 540/2018; Karila, 2008), and supporting teachers' pedagogical interactions with groups of children has been identified as an important way to enhance the quality of ECEC (Vlasov et al., 2019).

The Classroom Assessment Scoring System (CLASS; Pianta et al., 2008) is a well-established tool for researching group-level teacher–child interactions across a variety of countries and cultural contexts (see Cadima et al., 2010; Mashburn et al., 2008). Research has increasingly shown that CLASS is a valid and reliable tool for analysing teacher–child interactions in Finnish pre-primary (Pakarinen et al., 2010) and toddler classrooms (Salminen et al., 2021), but that the quality of teacher–child interactions varies across teachers and ECEC classrooms (e.g., Salminen et al., 2012). Prior studies in the Finnish context have further shown that teacher characteristics, such as advanced teacher

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[1] In Finnish ECEC, professionals working with children have either vocational school training (ECEC childcarer), a degree from a polytechnic/university of applied sciences (social pedagogue in ECEC), or a Bachelors' or Masters' degree from a university (ECEC teacher). In this paper, we focus on a teacher with a university degree and a student teacher in a university teacher training programme, using the terms 'teacher' and 'student teacher' throughout the paper.

qualifications and extensive work experience, are associated with high-quality teacher–child interactions (Salminen et al., 2012; Slot, Lerkkanen et al., 2015).

Using the CLASS tool to bolster high-quality pedagogical interactions between teachers and children has been recognised as an important way to support teachers' professionalism during in-service training (Early et al., 2017; Pianta et al., 2008). These studies have shown that high-quality ECEC can be safeguarded by increasing teachers' awareness of the key processes of teacher–child interaction. Providing feedback on CLASS-coded video recordings for teachers and using video clips to support consultation are particularly effective ways to accomplish this (Mashburn et al., 2008; Pianta et al., 2014). However, most studies considering the quality of teacher–child interactions through a CLASS lens have usually examined the interactions from an objective outsider's or consultant's perspective, using mean-level scores, to improve teacher–child interaction quality. Fewer studies have examined teachers' own reflections on their video-recorded practice as a subjective, contextual, and situated experience that steers their interaction quality and pedagogical work (Schachter, 2017). To our knowledge, no studies have reported the use of CLASS for such reflection purposes. This study therefore provides new insights into the nuances and in-depth features of teacher–child interactions by supplementing the traditional numeric CLASS scoring with qualitatively analysed teachers' self-reflections regarding their interactions in video-recorded situations.

The CLASS research supporting teachers' professionalism has largely focused on supporting teachers already working in ECEC or other educational contexts. Although studies have successfully explored the characteristics of both experienced and (less experienced teachers' teacher–child interactions (Cortina et al., 2016), they have hardly considered ECEC student teachers who are currently 'in training' and engaging in teaching practice with children during their studies. Research has shown that student teachers are in the process of developing their professional identities (Happo et al., 2012) and are therefore likely to benefit from self-reflection on their interactions with children during teacher training. Consequently, the current study provides an important and novel understanding of ECEC teachers' professionalism by using CLASS research to examine differences in teacher–child interaction quality between an expert teacher and an ECEC student teacher and their reflections on their interactions with the same group of children.

Teacher–child interaction quality

For the present study, CLASS (CLASS Pre-K; Pianta et al., 2008) was used as a tool to measure the quality of teacher–child interactions in ECEC. CLASS is an observational tool based on the teaching-through-interactions (TTI) framework (Hamre et al., 2013), which divides teacher–child interactions into three theoretical domains: emotional support,

classroom organisation, and instructional support. Emotional support comprises positive, warm interactions and a teacher's sensitivity and support for children's autonomy, which ultimately provide children with individual acknowledgement and care (Curby et al., 2013), fostering their willingness to explore and participate in classroom activities (Early et al., 2007; Hamre & Pianta, 2005). Classroom organisation refers to the predictability and structure of the learning environment (Pianta et al., 2008). Teachers' use of proactive guidance and maximisation of instructional time enhance learning opportunities, orient children towards activities, and prevent behavioural problems (Curby et al., 2009). Finally, instructional support captures the extent to which a teacher uses instructional discussions and activities that effectively challenge and support children's academic learning (Howes et al., 2008; Mashburn et al., 2008; Pianta & Hamre, 2009) and higher-order thinking skills (Pianta et al., 2008). CLASS was developed in the United States, but has since been translated into several languages and has been widely and reliably used in several other countries, including Portugal (Cadima et al., 2010), the Netherlands (Slot, Leseman et al., 2015), and Germany (von Suchodoletz et al., 2014). These studies have revealed country-specific nuances, but also striking consistency in general patterns of teacher–child interactions across countries. Emotional support and classroom organisation tend to be of higher quality across samples, whereas the quality of instructional support is lower (La Paro et al., 2009).

Over the past decade, a line of research focusing on the use of CLASS ratings and video recordings in professional development programmes (PD) has emerged (Pianta et al., 2008). The results of these PD programmes have emphasised that consultative support and watching video recordings influences teachers' practices and interaction with children (Early et al., 2017). Particularly, the ability to identify effective interactions from video recordings has been identified as an important phase in teachers improving their own interactions (Wiens et al., 2020). Although not using CLASS, the powerful experience of seeing and reflecting on one's own practices and work has proved valuable in PD research (Ryan & Cooper, 2004; Schachter, 2017). Teachers who reflect on their everyday pedagogical interactions are better able to articulate their professional knowledge and obtain a deeper understanding of their pedagogical practice (Wood & Bennet, 2000).

Expertise of an ECEC teacher and an ECEC student teacher

Research on teachers' professionalism in ECEC has often focused on experts and novices or non-experts (Happo & Määttä, 2011). Expertise is conceptualised as comprising appropriate education/qualifications, recognised skills, knowledge in a particular field, and the ability to use professional abilities in practice (Happo et al., 2012; Selinger & Crease, 2006; Woods & Bennett, 2000). Expertise is often associated with extensive work experience and is considered to develop gradually throughout a person's career (Happo

et al., 2012; Tynjälä et al., 2006). A novice can be considered a person who is still in the initial phase of acquiring these skills and competencies and gradually gaining expertise through work experience. Novices have only recently started their careers and have not yet solidified their know-how and pedagogical practices (Cortina et al., 2016).

For this study, we investigated a research case with two participants who had different positions in the ECEC field: one (considered an expert) had a bachelor's degree in ECEC and years of experience as an ECEC teacher; the other was a student teacher, mid-way through her three-year bachelor's degree in ECEC but with years of experience as an ECEC childcarer,[2] and she was not therefore considered a 'novice'. In the current study, the distinction between expert and novice was, at least to a degree, based on the perceived professional role and growing professional agency of ECEC teachers (Ukkonen-Mikkola, 2018). Students can, in fact, have an extensive amount of expertise, but not in the professional role of ECEC teacher.

Becoming an expert in ECEC means becoming aware of the values and goals of education along with concepts of learning and the meaning of supporting interaction (Happo & Määttä, 2011). Studies have suggested that engaging in reflective thinking is beneficial in the early work years and should continue throughout a person's career (Costigan & Crocco, 2004). Extending such reflection to ECEC teacher training was seen as a worthwhile endeavour.

Teacher–child interactions and professionalism as the core of pedagogical practice in Finnish ECEC

In Finland, ECEC refers to systematic and goal-oriented upbringing, education, and care that particularly emphasises pedagogy (Act on Early Childhood Education and Care, 540/2018; Finnish National Agency for Education [EDUFI], 2018). In ECEC, pedagogy consists of intertwined goals, practices, and professionalism (Alila & Ukkonen-Mikkola, 2018). Pedagogical goals are directed mainly towards supporting children's development, learning, and well-being, as well as families and society. Pedagogical practices are child-centred (based on seeing and acknowledging a child as an active participating agent) and actualised in teacher–child interactions. Teacher–child interactions are characterised by reciprocity and purposefulness, with the teacher having the ultimate pedagogical responsibility. Pedagogical practice includes teachers' ability to utilise content, methods, and the environment in a purposeful manner; thus, teacher's reflections on their

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[2] The ECEC student teacher had obtained a childcare qualification from a vocational school after 2.5 years of training.

pedagogical practices can reveal their professional learning. Finally, ECEC pedagogy depends on professionalism. Legislation sets out clear requirements for staff qualifications, and the work in day-care centres involves multi-professional teams of teachers, social pedagogues, and childcarers (see Karila, 2008).

Aims

The aim of the present study was to explore the quality of pedagogical interactions of an expert ECEC teacher and an ECEC student teacher with the same child group. Furthermore, the study aimed to explore ways in which the expert ECEC teacher and ECEC student teacher reflected on their pedagogical interactions. The objective was to produce knowledge on how they positioned themselves as professionals with different experiences, identities, and perspectives and how they reflected on their pedagogical interactions with children. The research questions were as follows:

1. How is the quality of the teacher–child interactions (emotional support, classroom organisation, and instructional support) of an ECEC teacher and an ECEC student teacher with a child group assessed using the CLASS?
2. How do the ECEC teacher and ECEC student teacher reflect on their pedagogical practices, and to what extent do their reflections align with the CLASS framework?

Methods

Participants and the research context

The study participants -were an experienced ECEC teacher (with over 20 years' work experience) and an ECEC student teacher (with 19 years' work experience as a childcarer). We refer to the participants as a teacher and student teacher for clarity. Additionally, seven children (aged 3–6 years) with multicultural backgrounds in a typical municipal day-care centre participated in this study. In this day-care centre, the teacher and student teacher conducted pedagogical activities with children—the teacher as part of her work and the student teacher as a part of her studies. The pedagogical activities included drawing and painting, circle-time activities (e.g., group discussions), learning activities (e.g., naming and concepts), and adult-guided imaginary play activities.

The data and data collection

The study data were part of the Jump along- project (collaboration between University of Turku, as coordinator, and University of Jyväskylä), funded by Finnish Ministry of Education and Culture. The data were collected by first video-recording the teacher (spring 2019) and later, the student teacher (autumn 2019), to observe the quality of teacher-child interactions during teacher-led activities. The data comprised eight videos of comparable pedagogical learning activities with similar activities and interactions: four videos of the teacher and four videos of the student teacher. Most of the videos were taken for the same child group, except for one video of the student teacher. The videos were collected over seven days. The videotaped activities each lasted an average of 20–60 minutes (285 minutes in total). For the current study, a sample of interactions was selected and coded numerically using CLASS, and the CLASS scores were supplemented with written justifications for the scores. The basis for selecting the video sequences for analysis was that they were approximately 15 minutes in length and the lessons involved extensive teacher–child interaction. A certified Pre-K CLASS observer (the second author of this study) performed the coding according to the CLASS Pre-K manual (Pianta et al., 2008). A score was assigned for each of the 10 CLASS dimensions (positive climate (PC), negative climate (NC), teacher sensitivity (TS), regard for students' perspectives (RSP), behaviour management (BM), productivity (PD), instructional learning formats (ILF), concept development (CD), quality of feedback (QF), and language modelling (LM)) using a 7-point scale (1 and 2 = low quality; 3, 4, and 5 = medium quality; 6 and 7 = high quality). Raw CLASS scores for all four cycles across the ten CLASS dimensions are displayed later in Figures 1 and 2 separately for teacher and student teacher.

Finally, both participants were interviewed individually in autumn 2020, with the first and third authors of the study using stimulated-recall interviews (SRIs; Vesterinen et al., 2010). Both interviews lasted about 1 hour and 40 minutes. The participants were told at the beginning of the SRIs that videos would be selected based on high-quality interactions and high CLASS scores, but CLASS scores were not revealed to them until later because they could have influenced the reflections. The selection of high-quality situations for reflection accorded with previous CLASS studies (e.g., Downer et al., 2011; Pianta et al., 2008), which claimed that using examples of objectively defined high-quality practices results in improvements in instructional quality (Pianta et al., 2008). Furthermore, using high-quality examples seemed an ethical decision in terms of the two participants reflecting on their own pedagogical practices during the SRIs in view of their different qualifications and experience.

The SRI instructions asked participants to watch and reflect on the videos, to stop the videos when they wanted, and to freely comment on their actions and thinking. Specifically, they were asked to speak about pedagogical activities and interactions with

the children, their personal experiences, and their learning objectives for activities. Supplementary questions (e.g., 'What kinds of pedagogical goals did you have?', 'What would you have done differently?') encouraged teacher reflection. No definition of pedagogy was given, since the interviews sought to elicit participants' views on their approaches to pedagogy. However, the student teacher had received a short introduction to the CLASS framework during her studies and therefore knew that CLASS was a tool for assessing the quality of teacher–child interactions.

Data analysis

The video recordings were first analysed by calculating the mean scores for the observed CLASS dimensions (Pianta et al., 2008) across all observed cycles. This was done by summing the dimension score for each cycle and then dividing it by the number of cycles. These means for the 10 CLASS dimensions are displayed in Figure 3, side-by-side for teacher and student teacher. Furthermore, dimension and domain means across all observed cycles and across both teachers are available in Appendix 1. Next, descriptive observation notes for each video, based on the CLASS framework and the transcribed SRIs, were analysed using qualitative thematic content analysis (Braun & Clarke, 2006). First, the data were studied, and initial codes were assigned. The unit of analysis was a meaningful thematic comment, usually of several sentences. Next, the codes were reviewed and analysed, and initial themes were formulated, which included the method of instruction, the well-being of the child, features of interaction, and the role of the teacher. The next step was to refine and name the themes and analyse their hierarchy, which resulted in the main themes and subthemes. The main themes aligned with the CLASS framework and were labelled accordingly (i.e., emotional support, classroom organisation, and instructional support). The subthemes included, for example, mutual interactions, planning, participation, and the well-being of the child. The final step of the analysis compared the similarities and differences between the themes derived from the expert teacher's and student teacher's interviews (see Table 1). Although the data mostly accorded with the CLASS framework, some subthemes were added (e.g., teamwork, collaboration with families, and assessment) according to the Finnish ECEC curriculum, and were included in the results.

Ethical considerations

This study applied the ethical principles for research with human participants (Finnish National Board on Research Integrity [TENK], 2019). An ethical pre-review was conducted, and the study was approved by the Ethical Committee of University of Jyväskylä. The teacher and student teacher were informed about the research objectives and process and gave their informed consent to participate. The children's guardians were also informed in detail about the study and asked for their consent for the video

recording of the pedagogical learning situations with the children. The children were told that their activities were being video recorded. In this ECEC centre, it was common to have student teachers in child groups, and videos and pictures were regularly used to document everyday activities and pedagogical practices; thus, from the children's perspective, the data collection method was not unusual. Children's agreement to participate in the recordings was captured in the situation (see Rutanen et al., 2021).

From an ethical perspective, we pondered whether it was 'fair' to compare the interactions of participants, due to the disparities in their qualifications and experience, despite their consent and awareness of the nature of the CLASS framework and ratings. We grounded the SRIs on both participants' enthusiasm for reflecting on and developing their professionalism and interactions with children and, since both had long experience in ECEC, we considered that this evened out the differences. Before the video recordings, the ECEC student teacher also had the opportunity to familiarise herself with the child group. Our objective was not to assess the performance of the ECEC teacher and student teacher, but to study differences in their levels of interaction. In the SRIs, we discussed with the teacher and student teacher their strengths in interaction beyond the CLASS scores, appreciating their own reflections. We thereby acknowledged the situatedness and variation of the observed scenarios and the case study nature of the research. In reporting the results, we paid particular attention to protecting the anonymity of the research participants, the children, and the centre.

Findings

Pedagogical interactions of the teacher assessed with the CLASS

The findings showed that the teacher's interactions with children were consistently highly scored for the domains of *emotional support* (dimensions: PC, NC, TS, and RSP) and *classroom organisation* (dimensions: BM, PD, and ILF), but mid-range for the *instructional support* domain (dimensions: CD, QF, and LM). The scores ranged from one to seven (see Figure 1).
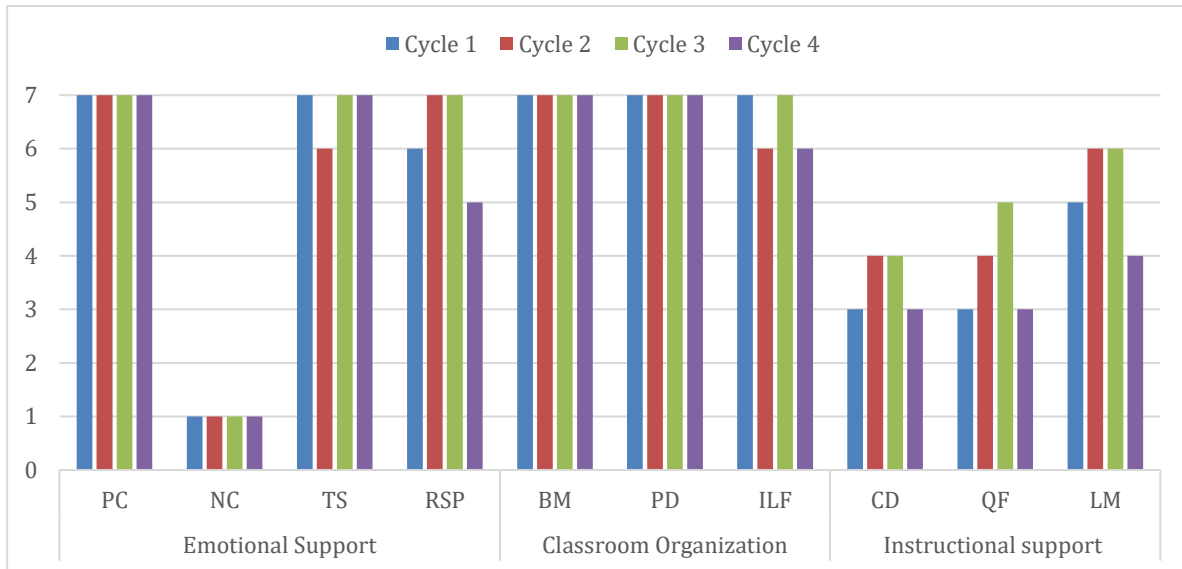
FIGURE 1   Teacher's CLASS scores from four cycles

As Figure 1 shows, the teacher's pedagogical interactions were consistent across different observation cycles. Only in the domain of instructional support (CD, QF, and LM) was there more variation between cycles, with scores ranging from high- to mid-range. These findings indicated that the teacher was able to systematically use high-quality pedagogical interactions in different situations.

A closer look at the interactions revealed that in the *emotional support* domain (PC, NC[3], TS, and RSP), the quality of pedagogical interactions was consistently high. The teacher focused on maintaining a positive climate in the child group. Closeness, warmth, calmness, respectful interaction, smiles, and physical proximity characterised her interactions with the children. The teacher consistently considered the children's perspectives, encouraged them, and supported their mutual interactions and peer learning. She paid close attention to children's needs, frequently asking whether anyone needed help or support, noticing children's small gestures, and acting accordingly. The children made interactional moves towards the teacher and shared their ideas and opinions, to which the teacher responded. No negative climate features were observed. The teacher had planned activities for the children, but she also considered the children's opinions and perspectives and adapted the activities accordingly. Furthermore, the teacher encouraged children to share their

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[3] Note: the score for NC was reversed (i.e., a score of 1 indicated that there was no negative climate).

opinions and supported their autonomy. The following examples illustrate these interactions.

> T: *Do you want to tell us something about Japan, because you have the flag of Japan with you today? … Can you tell us the names of colours in Japanese?*
>
> T: *Can you ask who has yellow [paint]? … Can you please help Tony, because Tony cannot reach up there?*
>
> T: *In our group, we usually ask: 'What [thoughts] do you have in your heart?' If you feel that you would like to say something to your friends, please raise your hand.*

Since the children were multilingual, the teacher considered children's first languages during pedagogical activities (e.g., by suggesting that children count the dots on a ladybird in their native languages).

For the *classroom organisation* domain (BM, PD, and ILF), the teacher had established clear classroom rules and expectations. She frequently used small hints, gestures, or requests to guide children (e.g., whispering additional instructions or gently touching a child's shoulder), and these small gestures and hints were enough to draw the child's attention back to the task. The teacher's instruction was proactive, which efficiently prevented behavioural difficulties, and no disruptive behaviours were observed. The children actively participated in pedagogical activities, and the teacher frequently supported children's participation with questions, comments, and advice. The teacher used various materials and methods to sustain children's interest in the activity, which resulted in children being enthusiastic and involved. The following excerpts describe these practices.

> T: *I will tell you [the instruction] again, because it was a bit complex. … We will do three tasks today (shows three fingers) … First, we will read a story about spring and afterwards we will head out to play.*
>
> T: *Please listen, carefully, to what we are about to do … Are you all listening now? … I will ask you to get one piece of white paper. Can you find white paper somewhere in this room? … Tell me what colour you found?*

In the *instructional support* domain (CD, QF, and LM), the teacher's interactions had consistent mid-range CLASS scores. The teacher and the children interacted constantly in the classroom, and the teacher promoted these interactions by asking both closed and open-ended questions. She sometimes supported children's abilities to analyse, deduce, and solve problems. During discussions, the teacher tried to connect abstract concepts and ideas with children's lives and experiences and expanded their thinking by asking additional questions and sharing knowledge. However, the teacher only infrequently provided children with detailed feedback, which could have further promoted their learning. In summary, the teacher constantly interacted with the children. She promoted their language abilities through questions, repeating, and expanding on children's

answers, but she also verbally explained her own actions. Overall, the language use in the classroom was rich and varied, and children's native languages were considered. The following examples illustrate the instructional support domain:

> T: *What do you need with you when you sail at sea? Where does the boat go? … Why did the cuddly toy not go with you on the trip? This is such a big ship that it should have fitted … There is a cabin for the cuddly toys. Keiko, show us where to find the cabin. Look, I have travelled so many times that I have seen there are nice cabins for pets … Would you need any food on the ship, if you had a long journey? How would you get food? Let's go hunting! That's a good idea.*

> Child 1: *It rains and ….* Child 2: *Then flowers grow.* T: *Flowers grow and? …* Child 1: *There are puddles.* T: *What do you need for the puddles?* Child 2: *Rubber boots.* T: *Yes, lovely springtime weather!*

The examples show the interactions between teacher and the children, and how she asked questions to support children's thinking and advance their knowledge. The last excerpt illustrates how the children and teacher created shared knowledge through discussion. Next, we will similarly consider the interactions of the student teacher.

The pedagogical interactions of the student teacher assessed with the CLASS

The findings showed that the student teacher's interactions with children were mostly high range in the domains of *emotional support* (dimensions: PC, NC, TS, and RSP) and *classroom organisation* (dimensions: BM, PD, and ILF), but mid-range in the *instructional support* domain (dimensions: CD, QF, and LM); however, the scores for different cycles varied (Figure 2).
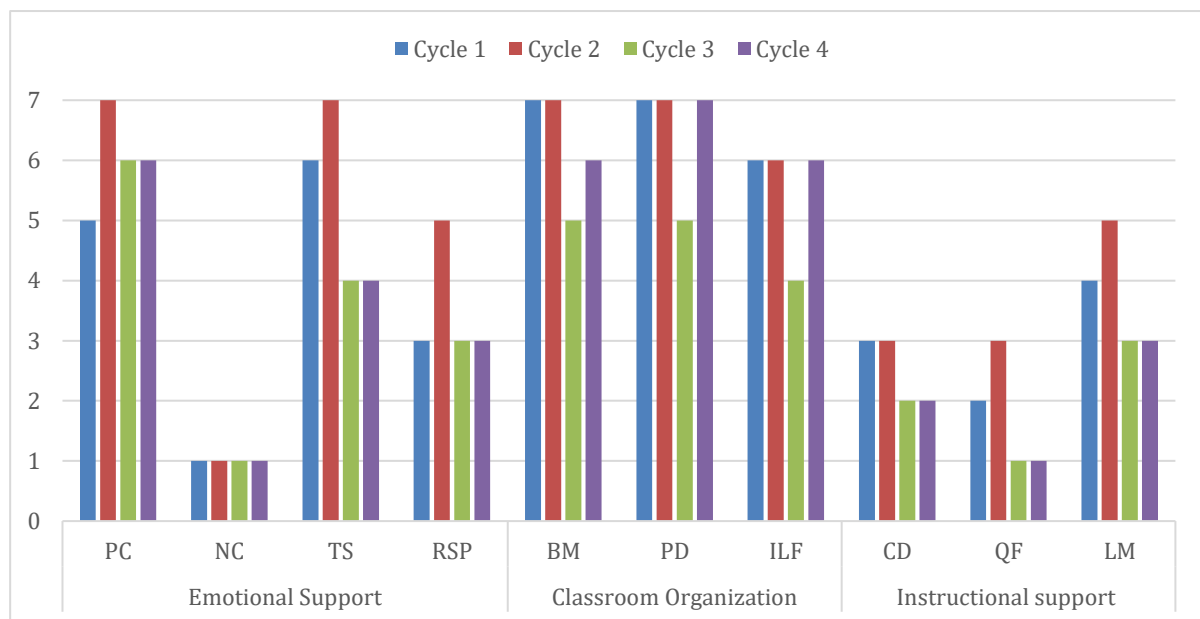

FIGURE 2   Student teacher's CLASS scores from four cycles

Figure 2 illustrates the variation in the pedagogical interactions of the student teacher across observation cycles: from high- to mid-range for the *emotional support* and *classroom organisation* domains, and from mid- to low-range for the *instructional support* domain, indicating a lack of consistency across cycles.

For the *emotional support* domain (PC, NC, TS, and RSP), the interactions of the student teacher were characterised by physical proximity, some touches, and warmth, calmness, and respectfulness in interactions with children. The child groups were not familiar to the student teacher, which may partly explain why there was a lack of high-range positive expectations of children and support for children's mutual interactions, and only some encouragement for children. There were no signs of a negative climate. The student teacher gave attention and individualised support to the children, and noticed the children's needs promptly. Occasionally, children's initiative or shared ideas were ignored, and during the third video, the student teacher seemed somewhat absent-minded. In general, the student teacher paid close attention to the children's wishes and initiative during the planned activities, but the children lacked opportunities to transform the activities. Support for children's autonomy was not systematic; however, the student teacher frequently encouraged children to express their opinions and ideas. The children would have benefitted from more frequent positive feedback from the student teacher. The following examples illustrate these interactions in practice.

> Child 2 tells ST about his toy, which makes sounds. ST: [smiles] *Do you want to show us, now, what kinds of sounds [the toy] makes? Are the sounds loud?* Child 2: *They are not very loud … You don't have to close your ears. It's not a very loud sound.* [Child 2 demonstrates the sound functions of his toy]. ST: *Thank you, Thomas.*

> ST: *Now let's divide you into two [groups]. Now think, how do you want to count? In which language?* Child 2: *Now, how should I do this?* [talks quietly without addressing his words to ST]. ST: *Do you need some help, Thomas?*

As the examples show, the student teacher was attuned to the needs of the children and frequently supported them in sharing ideas and opinions. These interactional exchanges promoted a positive atmosphere and created opportunities for children to actively participate.

For the *classroom organisation* domain (BM, P, and ILF), the pedagogical interactions of the student teacher were mainly in the high range, despite the third observation cycle being mid-range. Disruptive behaviour was observed only briefly during the third observation cycle; otherwise, the children behaved well, and the student teacher used proactive instruction. The children were actively involved in the activities, and only during the third cycle some children were also wandering around. At times their interest waned, perhaps because the goals of the activity and the instructions were rather unclear. The student teacher supported the children's participation in activities through her own

participation and by posing questions. The materials and methods were varied, and the children had opportunities for hands-on engagement, which supported their interest and involvement in the activities. The following examples illustrate these interactions.

> ST: *Then I have …* Child 2 and Child 4: *An iPad.* ST: *iPad, yes. Remember, last time we took some photographs? I will take now some, and then you can take photographs yourselves.*
>
> ST: [Sandra had her hand up, indicating that she wanted to speak]. *Let's go through a quick round. First Sandra and then Simon can say [what they have on their minds] and after that we will get going with today's programme … We will have to divide you into two groups. The first group will bake, and the other group will make a magazine. How can we divide you into two groups?*

The previous examples show how the student teacher supported children's interest and motivation towards the activity by giving them proactive instructions, offering them opportunities to participate in the activity using devices like iPads, and enabling children to participate and express their thoughts.

The *instructional support* scores (CD, QF, and LM) were mid-range for the student teacher; however, low-range scores were also observed in some cycles. The interactions of the student teacher with the children were characterised by discussions, closed and open-ended questions, and mutual exploration. The student teacher encouraged children to think analytically but did not connect concepts with the life experiences of the children. Furthermore, the use and explanation of concepts were not systematic. Many questions posed by the student teacher only elicited short answers. Additionally, feedback for the children was general and rather infrequent; more detailed feedback would have supported the development of children's thinking skills. The children were minimally encouraged to share knowledge, and their responses were only sometimes expanded on. Although there were frequent discussions between the student teacher and the children, they were not prolonged exchanges. The student teacher sometimes repeated the children's answers and sometimes extended their responses, but rarely explained her own actions. The language use was moderately rich and varied. The following example illustrates these practices.

> ST: *I'm sure you want to take your treasures home, but how could we keep them here in the day-care centre? Can someone think how we could keep them here?* Child 2: *We could put them into our lockers, and no one would take them …* ST: [takes iPad in her hands]. Child 2: *… and then we must take the camera, so that no one will take it.* ST: *You said camera … What do you think the camera can do to help us somehow record something about your treasure for the day-care centre?*

In the example, the student teacher encouraged children to think about solutions, and by posing questions and giving feedback, she tried to promote children's language production.

In summary, the results suggested that the quality of the teacher's and the student teacher's interactions were rather high quality. Figure 3 illustrates the mean CLASS scores for four cycles for both participants. It is noteworthy that teacher's CLASS dimension means were similar or higher than sample mean for all CLASS dimensions, whereas for student teacher, this was true for fewer dimensions (see Appendix 1).
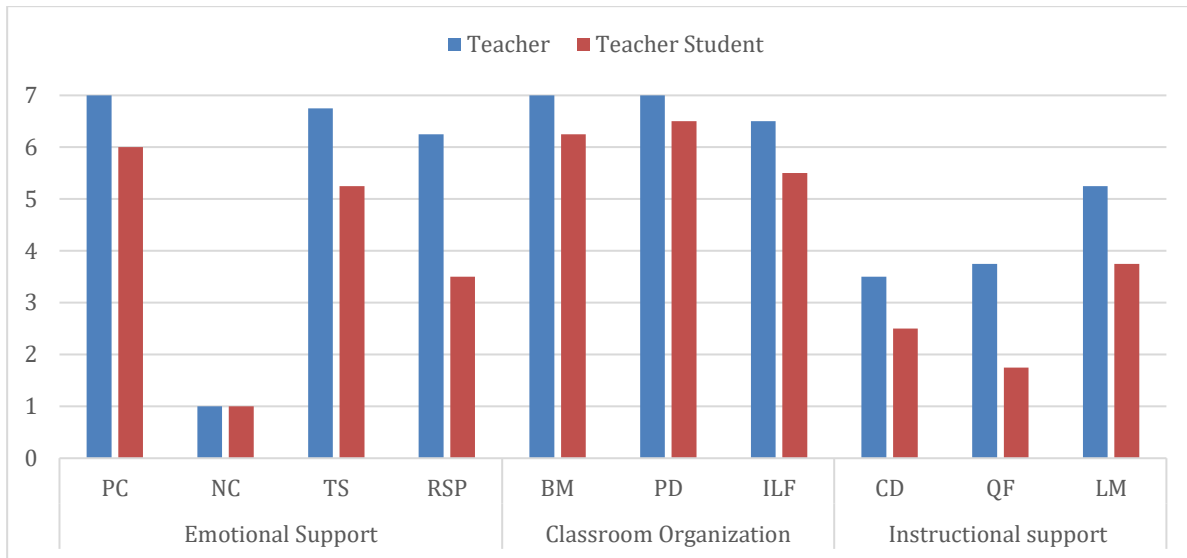

FIGURE 3   Mean CLASS scores for the teacher and the student teacher across cycles

As Figure 3 suggests, the quality of interactions of the teacher and student teacher were rather similar for the dimensions of PC, NC, TS, BM, and PD; however, a closer look at the interactions revealed that both participants had common strengths and development needs, despite the variation in the quality of their interactions. As Figure 3 shows, RSP was the biggest difference between the two. A plausible explanation is that the expert teacher was familiar with the children, since she had worked extensively with them. She knew the children, their competencies, preferences, and ways of behaving, and this enabled the teacher to consider the children's perspectives; however, the children were unfamiliar to the student teacher. Moreover, the student teacher was introducing pedagogical activities according to a pre-prepared plan and had to follow the plan carefully, since other students were interacting with other children in the same space and the students had coordinated the activities. Still, within the planned activities, there were opportunities for children to adapt the activities. The student teacher could have supported children's autonomy more systematically, which was a development need according to her CLASS scores.

Teachers' and student teachers' reflections on their pedagogical practices using the CLASS framework

The findings showed that both the teacher and student teacher reflected on their pedagogical and interactional practices. Table 1 illustrates the similarities and differences in their reflections. Separate cells in each row indicate the differences, and shared cells show the similarities.

TABLE 1   Overview of the participants' reflections on their pedagogical practices

Emotional support		Behaviour management		Instructional support		Finnish curriculum	
Teacher	Student teacher	Teacher	Student teacher	Teacher	Student teacher	Teacher	Student teacher
Supporting peer relationships	Supporting autonomy	Anticipation	Transitions	Learning by understanding, by succeeding, by experience, or through play	Learning by exploration, by succeeding, or through questions	Supporting children's identity and linguistic identity	Language modelling, language production
Teacher's role		Small hints for the child	Time management	Positive feedback	Encouragement	Planning of learning environment	Planning of pedagogy
Atmosphere		Motivating children for an activity	Clear instructions and guidance	Children and teacher as linguistic models	Teacher as a linguistic model	Assessment	
Observing the child		No haste		Learning concepts	The quality of language	Working with a team of professionals	
Knowledge of the child		Routines		Appreciating languages, bilingual pedagogy	Language-aware pedagogy	Athmosphere	
Child-centredness		Planning		Mutual interactions		Collaboration with parents	
Pedagogical and interactional sensitivity and trust		Small group activities		Supporting children in using and producing language			
Seeing and hearing the child and ensuring the child's well-being		Group management		Enriching (foreign) language learning			
Child's participation		Children's participation in activity		Learning during daily activities			
		Play and learning		Clear instructions (understanding)			

As Table 1 shows, the teacher and student teacher shared many similarities in their pedagogical reflections (e.g., valuing child-centredness, emphasizing the importance of small group activities, highlighting play and learning, and the importance of mutual interactions, and supporting children in language use). However, there were differences between the two teachers. The biggest was how they positioned themselves regarding the activities. The teacher reflected on, explained, and justified her actions, usually based on her long work experience and development of pedagogy, but she occasionally pondered how she could have handled the situation better. Her position was distinctly that of an expert and a formally qualified ECEC teacher, and her work experience was linked to her position and responsibilities in the professional team.

The student teacher, however, frequently reflected on her development needs as an ECEC teacher. She compared her past ways of working as a childcarer to the current situation and reflected on her learning through teacher training. The student teacher's position was that of a skilled but transforming practitioner with a changing professional identity, which was supported by her practical and theoretical understanding of how to plan, guide, and assess pedagogical practices. The student teacher highlighted her extensive work experience, but simultaneously mentioned her transformation into an ECEC teacher through her studies, and thus, her construction of a professional identity. The following examples illustrate these differences in how ECEC teacher and ECEC student teacher reflect on their pedagogy.

> *T: [pedagogically] you need courage to try out different things. There's no need to be afraid or anxious, like that did not work well. It's important to try out and after that, we are much wiser as we assess [our pedagogy]. (…) I always think that your role is to initiate and give [the child] some impetus (…) and you will trust that it [learning] begins from there. But also that you don't expect too much [from the child] (…) One colleague once told me beautifully, which has been my motto that "Hey, I believe in that child", (…) and if you tell the child, "Hey, I believe in you", it moves mountains in that moment.*

> *ST: I have perhaps not been the typical childcarer. I have had quite strongly the role of the teacher, and I have pursued it. I have enjoyed a lot to guide and to plan for children and to be involved in the whole [pedagogical] process in the team… However, I have thought about it consciously that you need to have certain change [in your role as ECEC teacher]. As a childcarer I have been able to sort of leave the responsibility for the teacher. Even though I participate and bring forth my opinion and expertise…I always have acknowledged that the final responsibility lies within the ECEC teacher. Taking the responsibility of the ECEC teacher…that perhaps is the challenge.*

As the examples illustrate, in the ECEC teacher's reflections, her courage and trust towards herself as a teacher and her trust towards children as learners are emphasized. In the ECEC student teacher's reflections, the focus is more on her own agency and teacherhood.

The findings in Table 1 showed that both participants described the same key themes according to the CLASS framework (i.e., emotional support, classroom management, and instructional support), although their wording varied. The main difference was that the student teacher specifically applied the CLASS framework in reflecting on her interactions:

> ST: *In my opinion, this is important—this instructional support and focusing on that. [We] give children those tools and guide them to solve the [problems] themselves.*

> ST: *The same thing applies in instructional support as in creating atmosphere … that I don't laugh boisterously or say all the time how wonderful they [the children] are … I feel that I show this kind of positive feedback and warmth in other ways, like touching and being close [to the children].*

This example illustrates how the student teacher consciously used the CLASS framework (instructional support in the first example and teacher sensitivity in the second example) as a basis for reflecting on her own pedagogical practices. The teacher described these two domains as follows:

> T: *Well, somehow, they [the children] have the opportunity to understand. I notice that I intentionally leave the last word out, for example, and wait a little bit for the children to recognise it. Of course, there are two things: I know the children are continuously attending and participating in [the activity] and they then get the feeling of succeeding by themselves, knowing that they can [succeed].*

> T: *I act by praising, not blaming [children]. You can say out loud again and again to the child: 'Good!', show a thumbs-up, give a pat on the shoulder. Of course, it is of great importance that you do this with all children ... everyone has something, a strength that you must notice.*

In these examples, the student teacher's reflections on the domains of instructional support and teacher sensitivity were clearly visible. The domain of *emotional support* was the domain both spoke most about. Concerning emotional support, both the teacher and student teacher highlighted the mutuality of interactions with the children:

> T: *This is popular [in the child group], this 'What do you have in your heart' [i.e., what do you want to tell others ... Everyone has a basic need to be heard and seen ... I think it is imperative that 'Hey, we listened to you, and now yours and my task is to listen to the friend as well'.*

> ST: *One must deal with every child so that the child is heard and understood and able to express [his/her thoughts], whether you have a shared language or not.*

As the examples show, both participants highlighted the importance of listening to the child; however, in practice, this was an area of development for the student teacher (see Figure 2 for the scores for the RSP dimension and Appendix 1). Both also highlighted the value of observations and detecting even tiny clues from children; as the teacher explained: '*You don't have to say every time "Now listen"; it is enough to put your hand on the child's shoulder or look at the child or something like that*'. When teachers act in a child-centred way, know the children well, and react to their verbal and non-verbal cues, they facilitate children's participation in activities. Both the teacher and the student teacher emphasised the importance of knowing the children; however, in this case, the child group was not familiar to the student teacher:

> ST: *Because I did not know the children very well, at first it was [scary] and [I felt] I don't know or cannot do this ... [I had to think] 'How can I encourage and support him, when I don't know [the child] and what string to pull?' But it went well, and I felt I succeeded and was able to motivate the child ... and was able to support the child's own active role.*

> T: *You must have a lot of knowledge of the child ... We have the advantage that we've pretty much had the same children [in the group] for several years.*

In this example, the student teacher acknowledged the unfamiliarity of the children and that she felt unsure about how to best support the child and help him accomplish the task. However, she utilised her work experience and, despite initial doubts, was able to act in a manner that motivated the child, which was a rewarding experience. The teacher, however, knew the children well. Both the teacher and the student teacher highlighted the importance of supporting the children pedagogically, giving them positive feedback, noticing their needs, and creating a safe and positive atmosphere in the classroom, which encouraged children to interact with their peers.

For the *classroom organisation* domain, both participants talked about the importance of small group activities, routines, planning, and group management skills. They emphasised clarity of instructions, which facilitates the desired behaviour of children. The following examples illustrate these points:

> T: *MACIC: Motivate, Activate, Concretise, Individualise, and Collaborate … This forms a good structure for my own [pedagogical] activity and this has always [since qualifying] been with me.*

> ST: *As I have already experienced, if you say or guide the wrong way, for a child who thinks he cannot do [a task], he can easily stop collaborating … Here [in the video] you can see the challenges [of the child] … I gave him alternatives about what to do, and the option to do something else, but surprisingly, he decided he wanted to complete the task. You cannot know beforehand what will happen.*

The first example described the key pedagogical principles of the teacher, and in the next example, the student teacher reflected on her actions in a challenging situation with a child. Since the child group in question was multilingual, both the teacher and the student teacher stressed the importance of instructional support and, in particular, language modelling, as the following examples show:

> ST: *Encouraging children to express themselves and narrate, I succeeded in that … using a teacher's [linguistic] model … I repeat what the child says and ask further questions. That is language modelling and instruction, and that comes naturally to me.*

> T: *I think the linguistic identity of the child is important … Your language is just as important as mine. You can teach me your language, and I'll teach you mine … Our job is to support the child's language and identity.*

These examples revealed that both participants appreciated language use and strove to support children's language development. In addition to previously introduced CLASS-related themes, the teacher and student teacher brought up subthemes that were not included in the CLASS framework, emphasising the Finnish National Core Curriculum for ECEC (EDUFI, 2018, see Table 1). The expert teacher's accounts highlighted the importance of specifically supporting children's linguistic identities, and also mentioned professional collaboration, the importance of the national ECEC curriculum (EDUFI,

2018), support for the participation of families, and the importance of assessment. The student teacher similarly highlighted the importance of professional collaboration, assessment, and the ECEC curriculum (EDUFI, 2018), but she also discussed her own teacher's role and construction of a professional identity. The following examples briefly illustrate these subthemes:

> T: *That girl has a lovely family ... Her family is a great resource for multilingual issues. They have visited us and told us about their culture. We have asked all families to give us numbers and concepts in their own languages, and we play with those in our daily activities.*

> T: *National Core Curriculum is enough. [Following it] is sufficient throughout the whole day.*

> T: *Assessment is such a big part of this job.*

> ST: *Here I notice an omission ... I had [instructed] the children to go and paint the luggage bag, but I didn't give any instruction to that child, X. The child just stayed there wondering whether to do [the task] or not.*

> ST: *We employees, both ECEC teachers and childcarers need to introspect and develop ourselves in that we understand the objectives in the activity and the pedagogical aims, which also set a lot of pressure to teacherhood or to childcarer. You must perform high-quality ECEC all the time.*

> ST: *Our teamwork functioned well all the time. We had a good division of responsibilities and roles and collaboration.*

In the excerpts, the ECEC teacher stressed the importance of family participation, viewing them as a resource for enriching pedagogy. She also refers to Finnish National Core Curriculum (EDUFI, 2018) contents and the importance of assessment. The student teacher reflects upon her pedagogical practices and highlighted the importance of providing high-quality ECEC and well-functioning teamwork.

Discussion and conclusions

Previous research has highlighted the importance of the quality of teacher–child interactions in ECEC (Burchinal et al., 2008; Curby et al., 2009; Mashburn et al., 2008; Perlman et al., 2016). This study contributes to the discussion by analysing the pedagogical practices and teacher–child interactions of an ECEC teacher and an ECEC student teacher. Both participants had years of ECEC work experience, but in significantly different positions due to their different formal qualifications and educational backgrounds.

The main differences in teacher–child interactions between the teacher and the student teacher, assessed using CLASS, concerned the consistency of the quality scores across

observation cycles. The teacher had highly consistent interaction quality, whereas the student teacher had somewhat inconsistent quality. Salminen et al., (2012) found similar variations in the quality of interactions between teachers. Both participants achieved relatively high scores for the emotional support and organisational support domains. Their long work experience may have been a factor contributing to these results, as previous studies (Salminen et al., 2012; Slot, Lerkkanen et al., 2015) have suggested associations between extensive work experience and high-quality interactions. However, variation was also observed for this domain, since the teacher scored systematically higher on the dimension of regard for students' perspectives, possibly because the teacher was more familiar with the children. Both participants had more modest and varied quality of instructional support across cycles compared to emotional support and classroom organisation (see also Appendix 1). La Paro et al. (2009) previously observed this tendency towards lower scores for instructional support.

Enriching the observations and interpretations gained through CLASS with the self-reflections on pedagogical interactions (Early et al., 2017) proved to be particularly interesting. In the interview, the student teacher underlined the importance of considering children's views and initiatives, in line with the Finnish National Core Curriculum for Early Childhood Education and Care (EDUFI, 2018). However, its application proved challenging in actual pedagogical practices with children, which was reflected in the CLASS scores for RSP. This aspect was therefore a development area and prompted the student teacher's self-reflection while observing her own interactions and pedagogy during the SRI.

The student teacher's awareness of the CLASS framework, manifested in her use of the CLASS domain vocabulary, was evident in her accounts of pedagogical interactions. She observed herself from the position of a 'student' and was clearly developing her professional identity (Happo et al., 2012), since she acknowledged many pedagogical development needs. Surprisingly, she did not position herself as a practitioner with strong practice-based knowledge, even though she had nearly 20 years' work experience in ECEC. During the SRIs, both the teacher and the student teacher broadened their view of pedagogy to include not only the teacher–child interactions and processes as highlighted in CLASS but also reflections on the roles of professional collaboration, the learning environment, and resources, in line with the Finnish Curriculum for Early Childhood Education and Care (EDUFI, 2018). These reflections mirrored the Nordic holistic view of pedagogy as a process (Alila & Ukkonen-Mikkola, 2018) covering the full day of a child in ECEC. Similar findings on how the surrounding cultural context (e.g., values and beliefs, curriculum) shape teachers' CLASS reflections have been reported elsewhere (see e.g., Slot et al., 2016). Therefore, adopting culturally contextualised approach to CLASS, such

as the one reported in the current study, can also add nuances of Nordic culture and curriculum to the prevailing CLASS discussion.

Our methodological contribution includes the development of an approach that applies the well-established CLASS tool for analysing teacher–child interactions (Pianta et al., 2008) and supplements the structured numeric CLASS scores with more extensive qualitative evaluation of observed situations, and self-reflections using video recordings. A particular strength of this approach was that the reflections were stimulated by the same video-recorded situations that were scored numerically using CLASS. The benefit of using CLASS as a reflective resource has been previously recognised in an in-service training context (Early et al., 2017; Pianta et al., 2008), but the approach differed from this study because the student teacher was undergoing pre-service teacher training, but no specific in-service training was provided for the teacher. In this study, the use of CLASS, reflection, and videos not only allowed more qualitatively rich insights into pedagogical interactions, but also provided reflective support for building professionalism, particularly for the student teacher. Videos proved to be a powerful, visual tool for observing interactions with children and learning through reflection.

The limitations of the study are linked to the use of only two, very particular cases since more cases would have improved the study's generalisability. Future studies should examine pedagogical practices using a similar research design but including teachers and students with more varied backgrounds (e.g., students without prior work experience and recently graduated novice teachers) to provide a more nuanced understanding of their interactions and reflections on pedagogical interactions. Moreover, although in the present study the sample choice was made to explore side-by-side the expert ECEC teacher and ECEC student teacher, it is noteworthy that having a student teacher with nearly 20 years' working experience is exceptional. This needs to be considered when interpreting the results from the perspective of the roles of expert and novice.

The current study underlined the challenges of defining and describing the expertise of an in-service teacher and a student teacher. As a particular case, the student teacher in this study had years of experience working in ECEC, but in another professional role and with different qualifications. However, her practical experience of ECEC settings in general (as a 'childcarer in ECEC') and her subsequent studies should not be downplayed. It is clear that different professional statuses and qualifications also involve different roles and responsibilities. In Finnish ECEC, ECEC teachers have a formal role in coordinating and leading pedagogy for child groups (EDUFI, 2018), despite professionals being expected to collaborate in developing and providing care, education, and instruction; actual pedagogical practices with children; and cooperation with parents.

To conclude, the present study offers new insights into the use of CLASS and expands our understanding of the quality of teacher–child interactions by combining CLASS assessments with teachers' own reflections on their pedagogical practices. CLASS scores relate to various kinds of interactions and pedagogical practices, but the merit of this study's approach is in illuminating the pedagogical justifications that facilitate teacher's reflections 'beyond the numbers'. Through reflection, interactions can be revealed to teachers and students themselves, but also to their team members, facilitating joint discussion and assessment. Moreover, the CLASS framework enabled the student teacher to recognise the quality of her interactions and her need for PD based on the high-quality interaction features of her pedagogical practices.

Previous studies have explored the characteristics of the teacher–child interactions of expert and novice teachers (Cortina et al., 2016). A research gap, which the present study partially addressed, is using CLASS during teacher training. Gradually, CLASS has been adopted for Finnish teacher training as a tool for analytically assessing and reflecting on teacher–child interactions and concretising pedagogical practices with children. The results of this small-scale case study point towards the effectiveness of this kind of approach, suggesting a need for further research in this area. By reflecting on their own practices through video recordings, teachers can become better observers of teacher–child interactions, thus gaining the capacity to evaluate their own classroom practices and generate ideas for making changes in their everyday interactions with children (Pianta et al., 2008). Teachers' awareness of the features of high-quality interactions and their ability to critically reflect upon their current practices are crucial in enhancing their PD, the quality of their pedagogy, and more importantly, the well-being, development, and learning of children in ECEC.

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APPENDIX 1 Descriptive CLASS statistics, dimension, and domain means

CLASS VARIABLES	N	M	SD	RANGE
Teacher–Child Interactions				
Across dimensions				
Positive climate (PC)	2	6.50	0.71	6.00–7.00
Negative climate (NC)*	2	7.00	0.00	7.00–7.00
Teacher sensitivity (TS)	2	6.00	1.06	5.25–6.75
Regard for student perspectives (RSP)	2	4.88	1.94	3.50–6.25
Behavior management (BM)	2	6.63	0.53	6.25–7.00
Productivity (PD)	2	6.75	0.35	6.50–7.00
Instructional learning formats (ILF)	2	6.00	0.71	5.50–6.50
Concept development (CD)	2	3.00	0.71	2.50–3.50
Quality of feedback (QF)	2	2.75	1.41	1.75–3.75
Language modeling (LM)	2	4.50	1.06	3.75–5.25
Across domains				
Emotional Support	2	6.09	0.93	5.44–6.75
Classroom organization	2	6.46	0.53	6.08–6.83
Instructional support	2	3.42	1.06	2.67–4.17

Note. A reversed Negative climate (NC)* score (1 = 7) has been used in calculating the means.