SCAFFOLDING THROUGH DIALOGIC TEACHING IN EARLY SCHOOL CLASSROOMS

Abstract

The present study examines what types of dialogic teaching patterns can be identified in the early school years, and how teachers scaffold children's participation and shared understanding through dialogic teaching. Thirty recorded lessons from preschool to Grade 2 in Finnish classrooms were analysed using qualitative content analysis. Two teacher-initiated and two child-initiated dialogic teaching patterns were identified. Teacher's scaffolding in teacher-initiated dialogues was characterised by high responsibility in maintaining the interactional flow and utilisation of diverse strategies. In the child-initiated dialogues, the teachers' scaffolding consisted of listening and inquiry, and the teacher thus served more as a facilitator of dialogue.

Keywords: dialogic teaching; scaffolding; teacher-initiated; child-initiated; preschool; primary school.

1. Introduction

The current views of learning emphasise the development of knowledge and understanding through talk and inquiry (Wells, 2007). While the quality of classroom educational dialogue is acknowledged to be critical for fostering deep learning and shared understanding among students of any age, dialogic exchanges take place very infrequently in most classrooms (Howe & Abedin, 2013). In addition, the literature on successful teacher strategies for facilitating dialogic interactions is scant.

Classrooms with high-quality instructional interactions are characterised by high levels of scaffolding and support for learning and thinking on the part of the teacher (Yates & Yates, 1990). The teacher plays a key role both in creating opportunities for students' conceptual development and participation through inquiry, open questions, answers and feedback, and in assisting students in explaining their own thinking, seeking consensus and solving problems together (Gillies, 2013; Gillies, Nichols, Burgh & Haynes, 2012; LaParo, Pianta & Stuhlman, 2004). In line with Rogoff's conceptualisation (2008), we use the term 'scaffolding' to refer to the practise of providing students with support for meaning-making and independent thinking. In order to become active learners, the teacher needs to support children by fostering classroom dialogue which allows them to build on each other's ideas (Littleton & Mercer, 2010). The teacher's role is, thus, that of a facilitator of guided participation (Rogoff, 1990) where children assume active roles through their participation in meaningful activities assisted or supported by adults.

However, surprisingly little is known about the concrete teaching practises that facilitate high-quality classroom dialogue in different age groups, especially among younger children. Empirical studies on the dialogic interactions taking place in the early school years are scant; slightly more information in the literature is available from the secondary school years (e.g. Lehesvuori, Viiri, Rasku-Puttonen, Moate, & Helaakoski, 2013; Littleton &

Mercer, 2010). Thus, the present study focuses on preschool and the first two years of primary school to examine what kinds of strategies teachers use when scaffolding children's participation and shared understanding through dialogic teaching.

1.1. Sociocultural approach and scaffolding

Vygotsky's sociocultural theory (1978) emphasises the importance of social interactions for development and learning, and the central role of language as both a cultural mediator and a tool for thinking. Vygotsky did not actually use the term 'scaffolding', which is often linked with his concept of the 'zone of proximal development' (ZPD; 1978). According to Vygotsky, it is highly informative to find out not only what students can do on their own, but to discover what they can do with the help of a more knowledgeable partner. Several researchers have used the term 'scaffolding' (first introduced by Wood, Bruner & Ross, 1976) to describe the process in which a teacher, a coach or a more experienced peer supports a child's learning with an interactional framework. In instructional scaffolding, the teacher may, for instance, guide the student's language learning and construction of the ideas and concepts by leading or asking probing questions that build or elaborate on the knowledge that the learner already possesses (Applebee & Langer, 1983).

In the current research literature, 'scaffolding' has often been used as a synonym for the support provided to learners (Mercer & Littleton, 2007). Van de Pol, Volman and Beishuizen (2010) suggest that scaffolding consists of three main domains: 1) *contingency*, which includes tailored, responsive and adjusted support; 2) *fading*, which refers to the gradual withdrawal of the support over time and 3) *transfer of responsibility*, meaning that the teacher eventually transfers the responsibility of performing the task to the student. There is widespread agreement on the crucial role of scaffolding in different educational contexts, including in distributed cognition (Cole & Engeström, 1993), various domains of knowledge

(e.g. Palinscar & Brown, 1984; Rojas-Drummond, Hernández, Vélez & Villagrán, 1998) and in both whole classrooms and small-group interactions (Elbers, 1996; Rojas-Drummond & Mercer, 2003).

Since language plays a key role in children's cognitive development, the dialogue between teacher and student can be seen as a form of scaffolding (Sedova, Salamounova & Svaricek, 2014) and a key part of the process of 'handing over' knowledge and skills (Wolfe & Alexander, 2008). Recent research has highlighted the key role of dialogic interactions between teachers and students in students' learning, development and reasoning (e.g. Littleton & Howe 2010; Mercer & Littleton, 2007). Teachers can also use dialogue for scaffolding students' peer group interactions and talk (Fernández, Wegerif, Mercer & Rojas-Drummond, 2001; Howe, 2010). Scaffolding through dialogue allows students to develop ideas they most likely would not have had on their own, while still being able to recognise them as the result of their own thinking (Game & Metcalfe, 2009).

1.2. Dialogic teaching

Various terms have been used to refer to different forms of educational dialogue or teaching, including dialogic teaching (Alexander, 2008), dialogic inquiry (Wells, 1999) and dialogical pedagogy (Skidmore, 2006). Researchers studying classroom talk are particularly interested in the nature, quality and facilitating structures of productive educational dialogues (Littleton & Howe, 2010). The meanings of the abovementioned terms are considered to be very similar. The present study draws from some of the key principles of dialogic teaching described by Alexander to demarcate the characteristics of classroom interaction.

According to Alexander (2000), dialogic teaching harnesses the power of talk to stimulate and develop students' thinking, learning and understanding. Alexander (2006) defines 'dialogic interactions' as exchanges where students ask questions, explain their points

of views and make comments about each other's ideas. The crux of dialogue is to exchange ideas that prompt further questions. Alexander proposed the following five key principles for identifying the features of dialogic teaching: 1) collective (teachers and children address learning tasks together as a small group or as a the whole classroom); 2) reciprocal (teachers and children listen to each other, share ideas and consider alternative viewpoints); 3) supportive (children articulate their ideas freely and without fear of embarrassment and they help each other to reach shared understanding); 4) cumulative (teachers and children build on their own and each other's ideas and link them into coherent lines of thinking and enquiry) and 5) purposeful (teachers plan and steer classroom talk with specific educational goals in mind). He divides these principles into two groups where the first three principles are seen to describe the form of discourse, whereas the last two principles describe the content.

Lefstein (2006) has suggested two more criteria as important features of dialogic teaching: dialogue should also be critical (participants identify and investigate points and explore questions inside the group) and meaningful (teachers and students relate to the topic and bring their own horizons to the discussion). A number of other researchers have also described the indicators of dialogic teaching. According to Reznitskaya, Kuob, Clarkc and Millerd (2009), teachers should 1) provide their students with a shared responsibility for discussion; 2) ask challenging and open questions and 3) provide feedback that will prompt further exploration. The teacher should also connect the teaching to students' ideas, request explanations for ideas and support collaboration. In addition, dialogic teaching has been linked to the fostering of collaborative interaction through classroom exploratory talk (Mercer & Dawes, 2008), working with mistakes (Myhill & Warren, 2005), nurturing students' questions (Nystrand, Wu, Gamoran, Zeiser & Long, 2003) and using heteroglossia as a discursive voice (Mesa & Chang, 2010). However, researchers should be critical in their idealistic thinking on the power of dialogue in classrooms. This kind of idealism can promote

a situated approach to dialogue, sensitive to the tensions inherent in dialogic interaction and grounded in the realities of the school's context (Lefstein, 2010).

1.3. Scaffolding in dialogic teaching

In order to engage all students in a classroom in exploratory behaviour teachers typically need to provide encouragement by asking the children thought-provoking questions and allowing them to share their knowledge and experiences (King, 2002). According to Chinn, O'Donnell and Jinks (2000), students participate and engage in high-quality classroom dialogue only if they are specifically asked to give reasons and justifications for their conclusions. Alexander (2000) proposes a definition of scaffolded dialogue, which refers to achieving common understanding through structured and sequenced questioning, and through 'joint activity and shared conceptions'. Alexander's conceptualisation of scaffolding thus involves guiding and prompting students with reduced choices, which expedites the transfer of concepts and principles. This conceptualisation can also be seen as problematic in terms of building student autonomy and agentic action. Dialogue in the school is typically strongly guided by predetermined learning objectives and contents (Lefstein, 2006), which may leave little space for joint goal setting and shared construction of ideas among the students. As a result, students must follow the lead set by an authority (i.e., the teacher or more experienced peers). According to Lyle (2008), the role of dialogue in students' learning is more than simply promoting better thinking and raising standards; it has the potential to enable students' voices to be accessed and legitimised. When examining teachers' means of scaffolding young children's participation during preschool and primary school, Hännikäinen and Rasku-Puttonen (2010) stressed that one key method for enhancing children's participation is for teachers to convey their respect for children as worthy members of a community by listening to their proposals, posing questions and expressing interest in

their views and experiences of the world. In the present study, the term scaffolding is used to refer to the process of supporting the two intertwined aspects of educational classroom dialogue: children's active participation in classroom talk and shared understanding. In our view support for children's active participation is a prerequisite for shared understanding, which, in turn, is associated with children's learning. By children's participation we mean active participation in joint activities and classroom talk which are targeted at sharing ideas and experiences and exploring and challenging each other's understanding.

An initiation-response-feedback pattern (IRF) (Sinclair & Coulthard, 1975), in which the teacher provides an initiation, the students respond and the teacher gives feedback, is a dominant script in many classroom interactions (Wells & Arauz, 2006). This can be seen as the most common (and, typically, rather perfunctory) way of scaffolding students' participation and understanding through interaction. In 'spiral' or 'cyclical' IRF sequences, the teacher capitalises on students' responses or initiations in order to continue classroom talk and to create a learning context for the joint construction of ideas (Edwards & Mercer, 1987). Teachers can use students' initiations for guiding students' understanding by using follow-up questions, clues, elaborations, reformulations, confirmations or recaps to build a continuum of thoughts in which students remain active (Rasku-Puttonen, Eteläpelto, Häkkinen, & Arvaja, 2002; Joiner, Littleton, Faulkner & Miell, 2000; Murphy, 2008).

The construction of classroom talk that is both dialogic and open requires careful planning and a structure in which learning goals are clearly identified (Gillies, 2015). Gillies (2015) examined how teachers engaged in dialogic teaching and provided examples of dialogic interactions that students consequently used when working cooperatively together. The teachers, who had participated in a workshop on dialogic teaching, listened attentively to the students' questions and challenged and probed their thinking, while providing them with enough time to respond. The teachers also scaffolded their students' thinking by helping and

encouraging them to connect prior information to the current topic, focus their attention on the main points and explicate their thinking and reasoning processes.

Other studies have examined teachers' scaffolding of dialogic talk in primary school lessons. For example, Reznitskaya et al. (2009) conducted a longitudinal study on using dialogic group discussions, whereas Haworth (2010) conducted a small-scale research study that attempted to disentangle the dialogic and monologic threads in teachers' talking with third graders. The existing evidence, however, indicates that student talking in the classroom often fails to involve challenges or provide evidence of what Habermas (1991) referred to as 'communicative rationality' (Fisher 2003, 2005). More fine-grained studies that look at the concrete elements of scaffolding are thus needed to inform educators about the means of fostering effective classroom dialogue that will support students' participation and shared understanding.

1.4. Aims of the present study

The aim of the present study is to investigate the ways in which teachers scaffold children's participation and shared understanding in terms of dialogic teaching in the early school years. Specifically, we attempt to answer the following research questions:

1. What kinds of dialogic teaching patterns can be identified in early school classrooms' literacy, science and mathematics lessons?
2. What kinds of strategies do teachers use when scaffolding children's participation and shared understanding through dialogic teaching in the classroom?

2. Methodology and methods

2.1. Education in Finland

In Finland, compulsory nine-year education starts the year a child turns seven, but it is preceded by mandatory attendance in preschool at age six. The preschool is arranged in day care centres or in school settings. Preschool teachers must have at least a bachelor's degree in education while primary school teachers must have a master's degree. The national curriculum emphasises the significance of children's active learning and the importance of social interaction groups and shared classroom interactions in both pre- and primary school. While studying in preschool is conducted through integrated thematic learning activities, studying in primary school takes place in subject-specific lessons.

2.2. Participants and procedure

The present study was drawn from Finnish preschool, Grade 1 and Grade 2 classrooms (6–8-year-olds). The children represent a subsample of a large population-based follow-up study of learning and motivation (Lerkkanen et al., 2006) of 2000 children, their parents and teachers from three municipalities located in different areas of Finland. The teachers and parents gave their written consent for their own and their child's participation in the study. The backgrounds of the parents represent the general Finnish population. In all classrooms, Finnish was used as the language of instruction. There were 10 children in the groups in preschool classrooms and 18 children in the primary school classrooms on average.

INSERT TABLE 1 ABOUT HERE

Table 1 represents the selection procedure of the lessons included in the analysis. The bigger data pool, collected in 2007–2009, consisted of live observations of preschool and primary classrooms. The teachers were selected for the live observations on a voluntary basis.

Data of the present study consisted of lessons which were also audio- or video-recorded at the live observations. In the preschool, recordings were available for two separate learning sessions for each of the eight preschool teachers (a total of 16 sessions). In the primary school, nine teachers who had recordings at all three observation time points (Grade 1 autumn and spring and Grade 2 spring) were selected. The recordings of the primary school teachers varied from two to four lessons at each of the three observation times (a total of 70 lessons). At this stage of the sample selection, a total of 86 lesson recordings (preschool and primary school classrooms) were available. In order to identify those classroom sessions with the highest likelihood of containing dialogic exchange, a further selection was made for the present analyses based on the classroom teacher-child interaction quality, as assessed by the live Classroom Assessment Scoring System (CLASS; Pianta, La Paro & Hamre, 2008) codings for each lesson.

2.3. Classroom observations

The teacher-child interaction quality was assessed by using the Classroom Assessment Scoring System (CLASS Pre-K or K-3; Pianta, La Paro & Hamre, 2008a, 2008b). The live codings took place in cycles of 20 minutes of observation, and a 5–10-minute period was used for assigning the codes. A typical 45-minute lesson thus provided two coding cycles. Each classroom was observed on two different days (a total of 6 to 12 cycles per classroom). All lessons were coded by two independent, trained observers, who assigned their CLASS ratings independently of each other (for details, see Pakarinen et al., 2010). The inter-rater reliabilities between the two observers in preschool varied between .76 and .96, in Grade 1 between .69 and .96 (autumn and spring combined) and in Grade 2 between .79 and .91.

The CLASS includes 10 observable dimensions measuring three broader domains of classroom quality: emotional support (four dimensions), classroom organisation (three dimensions) and instructional support (three dimensions). Each dimension was rated on a 7-point scale measuring the teacher-child interaction quality: low (1–2), moderate (3–5) or high (6–7). In order to be able to identify the scaffolding strategies used in classroom episodes involving dialogic interaction, the selection of video and audio recordings was restricted to teachers with observed cycles with moderate- or high-quality CLASS ratings of instructional support (ratings 5, 6 or 7). Based on this criterion, the sample pool was comprised of recordings of eight preschool classrooms and five primary school classrooms. From these classrooms, the lessons that had at least one cycle with high or moderate quality of instructional support were selected for the analyses based on the assumption that they would potentially contain frequent exchanges between the teachers and the children. Based on this criterion, the final data for the analyses consisted of 30 recordings (see Table 1).

2.4. Data analysis

There were three major phases during the analysis of the 30 transcribed lessons:

1) Identifying *dialogic teaching* episodes.

2) Dividing the identified dialogic teaching episodes into *two types of dialogic teaching patterns* in line with earlier findings of typical preschool classroom dialogue (Rasku-Puttonen, Lerkkanen, Poikkeus, & Siekkinen, 2012) indicating a qualitative difference between teacher- and child-initiated patterns.

3) Analysing the dialogic teaching patterns with respect to *functions* of talk in order to identify different *scaffolding strategies*.

2.4.1. Identifying dialogic teaching episodes

The first step of the analysis consisted of a careful review of the transcribed lessons. This meant reading the transcribed lessons several times in order to identify possible dialogic teaching episodes and to determine their boundaries. A dialogic teaching episode was identified as an extended exchange in which the topic continued essentially unchanged between the teacher and child or between children and which manifested three of the five principles of dialogic teaching described by Alexander (2006): purposefulness (teachers plan and steer classroom talk with specific educational goals in mind), collectiveness (teachers and children address learning tasks together as a small group or as a the whole classroom) and reciprocity (teachers and children listen to each other, share ideas and consider alternative viewpoints).

The other two principles, supportiveness and cumulativeness (Alexander, 2006), were not considered critical nor feasible for the purposes of the present study which focused on scaffolding of dialogue among relatively young children (6–8-year-olds). The analyses indicated that direct evidence of the extent to which children felt supported and safe would be difficult to extract reliably from the transcripts at the episode level; however, the fact that children offered ideas and shared their opinions was an indirect sign of students' experiences of safety and supportiveness in the classroom. In a similar vein, the cumulativeness of talk would not always be directly observable within each single episode because the discussions could be relatively short and not necessarily planned ahead, and teacher support could be quite minor. Because the focus of the study was on dialogic teaching episodes, classroom activities that did not contain elements of formal or informal learning tasks or exchanges between teacher and children (e.g., routines, individual tasks) were excluded from the analysis.

2.4.2. Division into two types of dialogic teaching patterns

The features of the interaction patterns identified in preschool classrooms in a previous study conducted by Rasku-Puttonen et al. (2012) were used as a starting point for the categorisation of the dialogic teaching episodes in the present analyses. In that study, three types of patterns were identified: in pattern 1, teachers provided children with opportunities to demonstrate knowledge and competence through question-answer sequences (presenting the IRF pattern without extended follow-up); in pattern 2, teachers *supported* children's participation and diverse contributions; and in pattern 3, teachers *allowed space* for child-initiated sharing of ideas. In the present study, pattern 1 (the IRF pattern) was not included in the analysis because the focus was on patterns that manifested dialogic teaching characteristics. In line with the former study, dialogic teaching episodes were divided into two main patterns according to whether they represented teacher support or whether the children had space for their initiatives: *teacher-initiated dialogue* (pattern 2) and *child-initiated dialogue* (pattern 3). In teacher-initiated dialogues, the teacher actively supported children's participation and diverse contributions throughout the dialogue, whereas a child-initiated dialogue evolved as the teacher allowed space for children to share their ideas, but encouraged children's exchanges and maintained the cohesion of the discourse, if needed.

2.4.3. Analysing functions of talk to identify dialogic scaffolding strategies

In the next step of the analysis, the dialogic episodes that had been divided into teacher- and child-initiated dialogues were further analysed according to functions of talk. The purpose of this phase of the analysis was to extract strategies that teachers used to scaffold children's active participation and shared understanding through talk. Although special attention was paid to teachers' lines, children's lines were also included in the analysis. A unit of analysis was a single word, a sentence or sentences where the function of talk was clearly identifiable. As presented in the following examples, the functions consisted

of various initiatives, responses, elaborations, feedback, expansions, generalisations, argumentative comments and summaries. An example is as follows:

Teacher: 'What do you see here on the table?' [inquiry]

Child: 'A telescope'. [factual answer]

Teacher: 'Yes, it's my grandfather's old telescope'. [prop and expansion]

Child: 'We have the same kind of a telescope at home'. [sharing experience]

Teacher: 'Oh really? And for what reason do you use your telescope?' [expansion and a follow-up question]

Child: 'Hmm, at least when it's dark outside and my dad wants to see stars'. [elaboration and sharing more information of an experience]

Special attention was also paid to different types of inquiries and questions posed by teachers. They were coded regarding whether they were open or closed, clarifying or expanding, practical and based on experience or abstract, examples of which include the following: '*What breed is your dog?*' (closed and practical) and '*Do you know any other dog breeds?*' (open, expanding and practical). '*Oh, you have a terrier. What type of a terrier is it?*' (closed, clarifying and practical) and '*Does anyone have any idea what kind of food terriers or other small dogs might eat?*' (open, expanding and abstract). Special attention was paid to inquiries and questions, because posing questions is one of the most common forms of exchanges in teacher-child interaction during teaching.

In all main phases of the analysis, we applied researcher triangulation within the research team to discuss the interpretations, and we re-examined the findings if consensus was not reached (Cohen, Manion & Morrison, 2007). Ambiguities were acknowledged, identified and discussed among the research group.

3. Results

3.1. Patterns of dialogic teaching

The first aim of the study was to identify what kind of dialogic teaching patterns can be found in preschool and Grade 1 and 2 lessons. Overall, interaction in the classrooms in the present data could be described as the transmission of information from teachers to children. The most typical forms of teacher-child interaction were the aforementioned initiation-response-feedback (IRF) exchanges that occurred in almost every documented lesson. Dialogic teaching episodes occurred significantly less often. In total, we identified 28 dialogic teaching episodes, of which 18 represented teacher-initiated patterns (pattern 2) and 10 represented child-initiated patterns (pattern 3). Seven of the dialogic teaching episodes were from preschool data (three representing pattern 2 and four representing pattern 3), nine from Grade 1 data (eight representing pattern 2 and one representing pattern 3) and twelve from Grade 2 data (seven representing pattern 2 and five representing pattern 3). The identified episodes included literacy, science and mathematics lessons.

In the next step, based on the analysis at the level of functions, we identified sets of functions in both teacher's and children's talk. Analysis of functions identified in teacher's talk (e.g., types of questions and prompts, extensions, summarising comments, confirmations) led further to identification of scaffolding strategies that teachers used to support children's active participation and shared understanding. The teacher's scaffolding strategies and the ways in which children's participated in the interaction implicated a further division into two sub-patterns for both patterns 2 and 3. As described in more detail below, the sub-patterns within each pattern were distinguished from each other by differences with respect to moderate or high quality of teacher scaffolding. The category that was seen as representing a higher quality of scaffolding (sub-patterns 2b and 3b) included versatile and rich participatory strategies that were likely to support children's conceptual thinking, joint understanding and

synthesis of ideas and insights that had been shared (e.g., the teacher tended to ask open-ended rather than closed questions, to extend children's ideas or prompt for varied ideas, to relate own comments to children's experiences and to summarise the accumulated knowledge). The category of moderate-quality scaffolding contained more unitary forms of questioning and less support for active participation (e.g., in sub-pattern 2a asking closed or too abstract questions), and lower support for shared content understanding (e.g., in sub-pattern 3a asking few clarifying follow-up questions and few or none summaries of the main content of interest). Dialogic teaching episodes representing a teacher-initiated pattern were divided into sub-pattern groups 2a and 2b, and dialogic teaching episodes representing a child-initiated pattern were divided into sub-pattern groups 3a and 3b.

3.1.1. Teacher-initiated patterns

Pattern 2a: Teacher-initiated teaching dialogue of moderate quality

Of the nine episodes that represented teacher-initiated pattern 2a, four were from literacy lessons, one from science lessons and four from mathematics lessons. These episodes were characterised by a high extent of prior planning on the part of the teacher (e.g. preparation of materials or goal-directed inquiry), and initiatives and involvement during the conversation to encourage children to share their knowledge, ideas and experiences. In this sub-pattern, the teachers typically asked a large number of short and closed questions to encourage as many children as possible to participate and to keep the dialogue moving along. Every episode included at least a few questions targeting a conceptual level; in some episodes, the majority of the teacher's questions were at this level. Questions formed chains of cumulative, coherent lines of shared experiences and opinions, but the dialogue lacked open, deep exchanges of thoughts.

In addition to asking questions, teachers made expansions and clarifications related to the children's comments; near the end of each episode, the teacher could draw together the main ideas and summarise what had been learned and what kind of new understanding was achieved in the joint talk. In this type of dialogue, the children's participation depended on the help and encouragement of the teacher; the children did not usually share their thoughts unless they were prompted to do so.

Example 1. Teacher-initiated teaching dialogue of moderate quality (pattern 2a): Planting seeds.

Context: In the beginning of the lesson, the teacher reviewed what had been learned in prior lessons on the growth of plants by using an IRF pattern: Where do flowers and plants get water? Where do the roots get water? What else does the plant get from the soil besides water?

Teacher: The next topic that we are going to study is how to grow a plant from a seed. There are different sizes of seeds, and this time I selected this mysterious-looking bag of mixed seeds. So there will be different colours of flowers. This one is called a 'sweet pea'. You can grow it in a pot. Does anyone know what to do with it when summer comes? Where can you move or put it? (…) Sally?

Child: In the sun.

Teacher: And …

Child: Outside.

Teacher: Yes, outside (.) because it can grow even more and because it is (.) a sweet pea it has this nice perfume scent. Since there are mixed seeds in the bag, the colour each of you will get to grow will be a surprise.

Child: Does everyone get his/her own or do we do it as a group?

Teacher: Everyone gets their own seed to grow.

Child: Yeah (*children whispers*).

Teacher (*Points at a watering can*)**:** Why do you think you need to do this? Molly?

Child: So that they will grow.

Teacher: Yes, and what are these? Anna?

Child: Flower seeds. They become flowers.

Teacher: Yes and these seeds are a bit special because they have this hard coat. The directions said that you need to soak them in water overnight. So in order for us to be able to plant them today, I let them soak overnight. What do you think happened to the seed last night when it was in the water?

Child: I know, I know, I know.

Teacher: Arthur?

Child: It gets softer.

Teacher: Yes (.) Well, what do you think, what gets easier when the coat of the seed is softer?

Teacher: Well, the beginning of the growing process gets easier. And you know what? Another way would have been to use a piece of sandpaper and to make the coat a little bit thinner. That way the growing is easier. But because I didn't have sandpaper I thought it would be better for us to soak the seeds. When you get those two or three seeds, will you put them just anywhere in the jar? How will you plant them? Sue?

Child: I would plant the whole thing.

Teacher: But in which part of the jar would you plant it? Alice?

Child: Well, I would plant them a bit farther away from each other so that they wouldn't grow, like, together.

Teacher: Yes, that's right. Please take out your science notebooks so we can check the planting directions.

Example 1 demonstrates a typical episode presenting pattern 2a, where the teacher's questions are partly practical and partly aimed at the level of concepts. The children participated in the dialogue but did not contribute their own initiatives, besides one practical question from a child who wanted to know if they all got their own seeds to plant. This seems to imply that certain portions of the teacher's talk contained concepts that presumably were unfamiliar to the children. The level of the teacher's talk did not fully match the level of most of the children's experiences or conceptual understanding, which may have been the reason for so few instances of children sharing their own ideas. For example, when the teacher asked the children to recount what becomes easier when seeds are soft, none of the children volunteered any responses to the question, which required some prior knowledge and was clearly targeting a particular correct answer. In order to draw more active participation from

the children, one possible choice of action could have been to adapt the question more to the children's level by giving hints or by tying the question about the seed into the children's prior experiences with seeds and plants.

Pattern 2b: Teacher-initiated teaching dialogue of high quality

Of the nine episodes that represented teacher-initiated pattern 2b, four were from literacy lessons, four from science lessons and one from mathematics lessons. The teacher support and scaffolding of the children's participation and shared understanding included fewer teacher questions than in pattern 2a, but the questions were more open in nature. They were also characterised by a closer match with the children's everyday experiences; this contributed to more freely flowing conversation and initiative among the children. The teachers scaffolded the children's understanding process by expanding, clarifying and summarising both their own and the children's ideas.

In example 2, the teacher asked only a few questions, but the questions were on a par with the children's prior knowledge and experiences of the topic; these questions created a safe space and an optimal level for the children to willingly share their thoughts. The teacher encouraged all of the children to contribute and share different views, and thus the talk between the teacher and the children was balanced. Following a broad exchange of different views, the main content of the dialogue was wrapped up jointly by the teacher and the children to clarify the moral point of why one is not likely to make friends by fooling them.

Example 2. Teacher-initiated teaching dialogue of high quality (pattern 2b): What is fooling?

Context: The teacher and the children have read a story.
Teacher: Who is the story about?
Child: About Aana.

Teacher: Mmm. What do you think this word 'fooling' means? They talked a lot about fooling.

Child: It's like cheating.

Teacher: Good.

Child: That it's not true.

Teacher: Yes, you are right.

Many more children start sharing their own ideas about what 'fooling' means.

Teacher: Would anyone else like to talk about fooling?

Child: He wanted to be his friend so he, like, tried to make him excited.

Teacher: Yes. So Kim already told the reason why he was fooling. But yes, you have given many really nice definitions of fooling. So fooling is like lying and playing tricks and so on.

Child: I think fooling sounds a bit like a fool, a person who does funny things.

Teacher: That's right. A fool that can fool others. Haha. Well, Alice, could you please tell everybody one more time why he was fooling?

Child: Because he wanted to be his friend.

Teacher: Is it right to get friends this way?

Many children answer 'no' and shake their heads.

Teacher: Mmm, you are right. It's not good to get friends by fooling.

3.1.2. Child-initiated patterns

Pattern 3a: Child-initiated teaching dialogue of moderate quality

Of the five episodes that represented child-initiated pattern 3a, two were from literacy lessons, two from science lessons and one from mathematics lessons. The child-initiated dialogues typically had a relatively equal balance between the children and the teacher talking. Although pattern 3a was defined by a child's initiative to share his or her knowledge or thoughts, the teacher played a significant role as a facilitator of the dialogue. The teacher allowed space for the children to contribute freely, but at the same time guided the flow of the

dialogue. In the episodes identified as being pattern 3a, the teacher listened actively and paid attention to the children's comments by asking clarifying questions or expanding on some of the children's comments, but the teacher did not steer the dialogue into clear goals related to understanding of the content.

Example 3. Child-initiated teaching dialogue of moderate quality (pattern 3a): Unusual dreams.

Context: The teacher and children have finished reading a story and the teacher opens a space for child-initiated talk by saying, 'Now, is there anything more you would like to talk about'?

Child: Well, every time I dream I bump into a house and then I fall from my bed to the floor.

Teacher: Well, sometimes when you dream you feel like you really (…)

Child: … can, like, fly.

Teacher: It can feel like you really are falling. Or you can dream that you are somewhere outside naked, and when you wake up you don't have a blanket.

Child: One time I went sleepwalking, and I walked out to the stairs with my blanket.

Children continue sharing their unusual dreaming experiences.

Teacher: You really had some wild stories. But now we're no longer dreaming, so we'll start writing and I'll tell you what to write.

As seen in example 3, the teacher was open to the children's comments and made some expansions based on these comments; however, the teacher did not introduce any higher-level concepts in the conversation or summarise either the meaning of the content being discussed or the shared understanding at the end of the dialogue. The dialogue did not contain questions posed by the teachers that provoked thinking, nor were there requests for the children to explain their dreams. The episode included active social sharing, and many

children participated eagerly, but the episode did not seem to evolve into the integration of sharing and content goals.

Pattern 3b: Child-initiated teaching dialogue of high quality

Of the five episodes that represented child-initiated pattern 3b, three were from literacy lessons and two were from science lessons; none were from mathematics lessons. The initial setting of the dialogue was similar to that found in pattern 3a, but the teacher's facilitating role was more effectual in strategically scaffolding the children in order to generate high-quality dialogic sharing. The teacher allowed space for the children to talk; however, by actively listening to them and posing well-timed questions, the teacher also actively supported them to expand on their comments and deepen their thinking. The teacher expanded on the children's comments, but also challenged their thinking processes and encouraged them to elaborate on the ideas they had presented instead of simply telling them straight answers. The episodes coded as 3b typically integrated social and content goals, and were linked to practical topics that the children found interesting.

Example 4. Child-initiated teaching dialogue of high quality (pattern 3b): Age limits in movies.

Context: The teacher and children have just finished a teacher-initiated dialogue concerning how dangerous piranhas are.

Child: I watched a late-night TV show in which they went diving in a lake. But then they forgot one man, and the others left with their boat and then a shark came and bit the man's legs off. And then a piranha came and bit the woman's legs and she died too.

Teacher: Was it some kind of movie?

Child: Yes.

Child: What movie?

Child: It was some … Well, I can't remember the name but it was on a few weeks ago.

Teacher: That's why those kinds of movies are on late at night, because they include violent scenes that are not meant for children to see. You should always obey those age limits. Have any of you noticed that the age limits are sometimes marked with letters and sometimes with the age? For example, if the movie is marked with a 'U', children of your age are allowed to watch it. Raise your hand if you have seen these age-limit markings somewhere.

Children continue eagerly sharing the kinds of markings and movies they have seen.

Child: I've watched *Harry Potter*.

Many children agree with this comment.

Teacher: The *Harry Potter* movies have these limits because children your age are not used to seeing those kinds of scary scenes. But, for example, with your parents you can watch movies that are meant for children around your age. But 18 movies are only for adults.

Child: I have watched them. I watch them all the time.

Teacher: Well, have you ever thought why they put these limits on movies? Why is there a limit of 18 years?

Child: No, I haven't…

Teacher: Have they just wanted to annoy you so that you can't watch them?

Child: You can have bad dreams.

Teacher: Yes. The limits are there to protect you so that you won't have nightmares. Imagine if you had never seen some horrible and nasty thing happen and then you saw an adult movie, and you saw it there for the first time. After that, you might have bad feelings and wish you hadn't seen it. You have to take care of your mind.

Child: I have.

Teacher: You'll have plenty of time to watch those movies when you are adults.

Example 4 contains a clear structure, through which the teacher constructed the dialogue with the children. The teacher not only reviewed and summarised the main points at the end of the dialogue, but also made recaps during the talk. The teacher provided effective support for the children through expansions and questions and by encouraging their participation.

3.2. Strategies of scaffolding participation and shared understanding through dialogue

3.2.1. Strategies of scaffolding teacher-initiated teaching dialogues

The second aim of the study was to examine the kinds of strategies teachers use when scaffolding children's participation and shared understanding through dialogic teaching. The teacher-initiated teaching dialogues we observed typically contained many concrete behavioural incidences of teacher scaffolding. The scaffolding strategies used were often very concrete and direct with respect to encouraging children's participation. The teacher's role was that of a leader, who first attracts children's interest, pulls them into a mode in which they are eager and willing to share their thoughts and then creates a safe environment for the children to participate without fear of embarrassment.

INSERT TABLE 2 ABOUT HERE

Table 2 lists examples of both teacher's and children's behavioural acts or strategies for maintaining dialogue. This list of strategies implies a more active and versatile role for the teachers than for the children in keeping the dialogue alive. Several teacher questions were typically seen in the beginning of the dialogue to open space for the sharing of information; they were followed by the teacher's offering of hints and prompts to support content understanding. The teacher often used low modality inquiry terms and open questions in order to get as many children as possible to participate and to convey that there was not only one correct answer. By propping the children's answers, the teachers indicated that they were listening and interested. The episodes seemed to lead to the most active participation when the topic and questions were linked to the children's concrete experiences.

In comparison to the teacher's high investment of effort and goal-setting, the children had significantly lighter roles in setting the stage and sustaining the dialogue. The children answered the teacher's questions, but their participation depended on the teacher setting a

level for the dialogue that was concrete and comfortable enough to allow many children to participate by sharing their knowledge and experience. When this optimal level was reached, the children began willingly sharing their thoughts and their talking reached a balance with the teacher's talking (pattern 2b).

3.2.2. Strategies of scaffolding child-initiated teaching dialogues

The child-initiated teaching dialogues that we observed indicated a more balanced structure between the teacher's and the children's talk, and in these two patterns (3a and 3b) the teacher's role was closer to a facilitator than a leader. In the teacher-initiated dialogues, the teacher's scaffolding focussed mostly on supporting the children's participation as such, whereas in the child-initiated dialogues, the stress was more on providing support for the children's content understanding; for example, the understanding of concepts and learning to engage in content-related problem-solving and argumentation. In these two patterns, the teacher did not need to attract the children's interest because the children themselves had introduced the topic and initiated the dialogue. Because the teacher had not planned or prepared the content or direction of the dialogue beforehand, it was necessary for the teacher to actively listen in order to be able to scaffold the spontaneously progressing dialogue.

INSERT TABLE 3 ABOUT HERE

Table 3 lists examples of the most typical ways both the teacher and the children effectively contributed to maintaining child-initiated dialogues in patterns 3a and 3b. Providing space for the children themselves to share their thoughts did not mean that the dialogue would be devoid of goals or that the teacher would not actively participate. The teacher's role as a facilitator was based on active listening and, when needed, asking

expanding or clarifying questions to encourage the children to explain their thinking and understanding in more depth. If possible, the teacher linked the topic being discussed to subject concepts or content and to moral rules or societal knowledge by elaborating on the children's comments. The teacher typically accepted the children's answers without evaluation, which was critical for creating a safe and free zone of participation. At the end of the dialogue, the teacher summarised the main content of the dialogue by linking the expressed experiences, ideas and viewpoints together into a broader context.

Compared to the teacher-initiated patterns, the children not only played a more active role in commencing the dialogue, but they willingly took more responsibility for the flow of the conversation even though they were supported and encouraged by the teacher. The children's own knowledge and experiences of the topic resulted in a richer and more equal range of participation, and many more opportunities and perspectives for content understanding emerged as a result.

4. Discussion

The present study set out to examine what kinds of dialogic teaching patterns can be identified in early school classrooms, and what kinds of strategies teachers use when scaffolding children's participation and shared understanding through dialogic teaching. Two main patterns of dialogic teaching were identified in the study, which were each further divided into two sub-patterns: teacher-initiated moderate- and high-quality patterns and child-initiated moderate- and high-quality patterns. The teacher-initiated teaching patterns were characterised by concrete strategies that were generated by the teacher, who played the role of a leader and actively supported and maintained the dialogue. In the child-initiated patterns, the talk and responsibility of the dialogue were more balanced between the children and the teacher; the role of the teacher was primarily to facilitate the children's active, partly self-

regulated sharing of thoughts. The results are of particular importance as they contribute to the scant previous knowledge by emphasising the different scaffolding strategies of teachers, and describing the concrete means of maintaining productive dialogue in the classroom.

Our first research question focussed on the types of dialogic teaching patterns that can be identified in early school literacy, mathematics and science lessons. The results showed that, first, both teacher- and child-initiated patterns were identified from the data and, second, that the sub-patterns within each pattern were distinguished from each other by differences with respect to the moderate or high quality of teacher scaffolding. The analyses indicated that in preschool settings, the child-initiated patterns were as common as the teacher-initiated patterns based on an equal amount of identified episodes, whereas especially in Grade 1, the majority of dialogic episodes represented the teacher-initiated pattern. Although the sample size did not allow us to draw any strong conclusions concerning the effects of context, the findings did imply that preschool classrooms may be more conducive to child-initiated dialogues than primary school classrooms. This might be due to the primary school teachers having a more binding responsibility for advancing the age-level learning goals in basic academic skills that are set in the national curriculum in Finland, which may limit the time used for discussion, open-ended questions and the exploratory approach to classroom dialogue (Smith, Hardman, Wall & Mroz, 2004). In preschool, such academic aims for children's learning do not exist in the Finnish curriculum. Prior studies have indicated that during the training phase, the main concerns among student science teachers are lesson content, discipline and time management (Lehesvuori, Viiri, & Rasku-Puttonen, 2011). If the time required for children to share their ideas and opinions is seen to be taking away from the more immediately pressing academic targets of learning, it is understandable that teachers are not willing to invest time for discussion at school, despite its acknowledged beneficial aspects.

Although the effects of the subjects of the lesson (i.e. literacy, science or mathematics) were not our research aim as such, based on the results it is interesting to note that all four patterns could be identified in the literacy lessons (13 episodes in total). This may be due to the heavy emphasis on literacy lessons each day in early school years, and to the numerous content fields of literacy, which allow for a rich range of different teaching methods during the program. On the other hand, dialogic episodes were least often identified during the math lessons (6 episodes in total). In the present dataset, only one of the mathematics lessons contained an episode that represented a child-initiated dialogic pattern. Moreover, the findings indicated several episodes of both child-initiated dialogues (4 episodes) and high-quality teacher-initiated dialogues (4 episodes) in the science lessons, although science lessons in secondary school are typically found to be authoritative with scant dialogue (Mercer, Dawes & Staarman, 2009). Scott and Ametller (2007) argue that meaningful student learning in science lessons would require space for dialogic discussions before introducing and concluding the discussion with an authoritative voice. The subject of science (especially in the early school years' curriculum, which emphasises topics related to children's own experiences) is likely to offer a more flexible and varied lesson structure than, for example, a mathematics lessons, where learning often involves recitation and independent tasks rather than classroom discussions.

Our second research question focussed on the teachers' strategies of scaffolding the children's participation and shared understanding. Various studies have acknowledged that the teacher's role as a facilitator is vital for students' engagement in dialogic exchanges, providing them with opportunities to learn to ask questions, examine and evaluate given ideas, negotiate solutions and reason and explain propositions (Alexander, 2008; Mercer & Littleton, 2007). Our findings suggest that teacher scaffolding strategies may be different depending on whether the dialogue is teacher-initiated or child-initiated. The quality of the

teacher's strategies may be especially important for facilitating shared understanding and conceptual learning through dialogue, while the activeness and timing of teacher strategies may be especially relevant for ensuring equally distributed participation among the children. However, even high levels of teacher activeness (e.g., frequent questions or prompts) did not necessarily lead to high rates of children's participation (for example, in pattern 2a). This suggests that activeness of the teacher and quality of teachers' scaffolding strategies are mutually interdependent (e.g., asking open-ended questions may allow more children to share thoughts and provide more opportunities for reflection), and both aspects of scaffolding, supporting children's active participation and promoting shared understanding, are necessary for productive classroom dialogue. According to Game and Metcalfe (2009), scaffolding in dialogic teaching allows students to have thoughts they most likely would not have on their own, while still being able to recognise them as their own. Scaffolding is thus not about manipulating children's ideas towards teacher-intended targets, but rather involves supporting them to venture deeper in their thinking and to consider different points of views regarding their own experiences.

Setting the stage for open classroom dialogue typically requires that the teacher has clearly identified learning goals for the lesson (Gillies, 2015). Based on the results of the present study, during teacher-initiated dialogues, the teacher is likely to have a clear agenda for the learning and use a wide variety of strategies to reach goals and provide intentional scaffolding for children to participate in the dialogue. By listening to the children's proposals, posing questions and being interested in their ideas and views, the teacher conveys respect for the children as full members of the community, thereby fostering their willingness to participate (Hännikäinen et al., 2010). The quality of the teacher's questions plays a critical role in supporting children's participation and in encouraging them to ask thought-provoking questions and share their own knowledge and experiences (King, 2002). Our results suggest

that authentic questions that resonate with children's experiences and allow them to draw from their knowledge stimulate classroom dialogues. In addition, concrete examples and personal experiences about the topic are often necessary for children to link their previous experiences into a new set of knowledge.

In the child-initiated dialogues in our study, teacher scaffolding was characterised by active, sensitive listening and inquiry. Child-initiated dialogue can be quite demanding for teachers because they cannot predict where the dialogue might lead, and they might not necessarily have a prior plan for the discussion. However, in these situations, teachers also need to have the learning goal clear in their mind to be able to be sensitive and flexible during learning sessions. The findings of the study indicate that active listening is needed for the teacher to be able to follow the flow of the dialogue and to summarise it in a way that will be meaningful for the children. The teacher's role is critical in teaching children to ask and to answer questions, and in helping them to learn how to explain their own thinking (Gillies, 2013). According to Chinn et al. (2000), students participate and engage in high-quality classroom dialogue only if they are specifically asked to give reasons and justifications for their conclusions. The teacher's support is needed both to facilitate the children's deeper thinking and to ensure more active participation than simply answering questions.

Based on the relatively low amount of identified dialogic teaching episodes, the findings of this study indicate that both teacher- and child-initiated dialogues are scant in early-year classrooms. Increasing child-initiated dialogues in the early primary grades is especially needed to facilitate children's willingness and ability to actively share their thoughts and ideas. This requires evidence-based information to be available for teachers regarding how to scaffold children towards goal-directed interaction and shared understanding. Mercer et al. (2009) suggest that the findings to date concerning dialogic teaching have not had an effective impact on education in schools, as most teachers have only

a vague idea about how to use discussion as a teaching tool and lack specific strategies to conduct dialogic teaching.

Development towards a more dialogic teaching culture needs to begin during the teacher education process by providing, observing and practising concrete and specific strategies to support both teacher- and child-initiated dialogues. Gillies (2004) pointed out that teachers use more mediated-learning interactions when they have received training in communication skills that are designed to promote students' thinking and to scaffold their learning. In turn, the students of trained teachers in her study modelled many of their teachers' verbal behaviours, provided more detailed explanations and asked more questions than students in the control classes. Access to a range of scaffolding strategies and self-efficacy beliefs may be a critical prerequisite for teachers to allow space for child-initiated talk in lessons without fear of losing valuable time or control of the classroom. Linking the topic to the children's personal experiences and to previous knowledge may effectively raise the level of teacher-initiated dialogue and increase the children's participation. Both teacher- and child-initiated dialogues have their own place in classrooms; neither of them can be considered to be more effective for learning than the other. Supporting children's natural curiosity and eagerness to share their experiences in the early school years creates a basis for the use of discussion as a productive way of learning.

The current study does have certain limitations. First, the criteria for identifying the dialogic teaching episodes are somewhat problematic as all the identified pattern types in the present study manifested only three of the five principles of dialogic teaching described by Alexander (2006) (i.e. purposefulness, collectiveness and reciprocity); the two other principles (i.e. supportiveness and cumulativeness) could not be proved in all patterns. Future studies are needed to obtain more empirical evidence regarding how all of these five dialogical principles can be identified in classroom interactions. Second, although we

recognised the importance of nonverbal interaction, we were unable to analyse body language and gestures from the audio-recorded lessons. In turn, this allowed us to concentrate on verbal communication, which plays a greater role in actual dialogue. Third, a larger sample size would be needed in further studies to study the variations in patterns more deeply. In addition, the benefit for children's learning outcomes was not controlled as part of the study. Further research is needed to examine to what extent the quality of classroom dialogue is associated with young children's academic and motivational outcomes. Finally, the study's educational context needs to be taken into account, as Finnish children enter primary school quite late (at age seven) compared to many other countries. Furthermore, the preschool curriculum in Finland does not have strict academic learning aims.

To conclude, teacher-initiated dialogue involves the intentional scaffolding of children's participation through questioning with a clear learning goal in mind, while in child-initiated dialogues, teacher scaffolding consists of active listening and inquiry towards learning and understanding. This study indicates that the quality of scaffolding may be highly linked with shared understanding of content and scaffolding activeness when the children actively participate. The value of dialogic teaching should be acknowledged more strongly in everyday classroom situations in order to create a setting for children's active participation and shared understanding. The present study produces important practical information for educational professionals in terms of how to scaffold children's participation and shared understanding through both teacher- and child-initiated teaching dialogues.

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Table 1.

Selection procedure of the lessons included in the analysis

Classrooms, teachers or lessons at each selection stage	T1 Preschool Spring 2007	T2 Grade 1 Fall 2007	T3 Grade 1 Spring 2008	T4 Grade 2 Spring 2009	Total
Classrooms with live observations (including CLASS ratings)	49	16	33	21	119
Teachers with video or audio recordings (simultaneously with live observations)	8 [a]	9 [b]	9 [b]	9 [b]	17
Number of lesson recordings	16	34 [c]		36	86
Recordings of lessons with at least one CLASS cycle rated as showing moderate- or high-quality support	7	12		11	**30**

Notes

[a] There were 2 video- or audio-recorded learning sessions available for each preschool teacher

[b] Only those Grade 1 and 2 teachers were selected who had 2 to 4 video or audio recordings on all three time points T2, T3 and T4

[c] The total number of lesson recordings of the 9 teachers at Grade 1 fall and spring

Table 2.

Strategies of scaffolding and children's reactions in teacher-initiated teaching dialogues

Teacher scaffolding strategies	Children's reactions
• Uses interesting and inquiry-stimulating vocabulary • Shows that he/she is listening, and prompts children's comments by using short conforming phrases (yes, that's right, mm) or comments, or by repeating the child's comment • Can adopt a low modality, using words such as 'perhaps' and 'might' as an invitation to a range of possible actions • Indicates that there might not be just one correct answer, and that children are allowed to express their opinions and to explain them • Uses authentic open-ended questions that allow children to tell about their personal experiences • Provides hints, makes prompts and reformulates questions if they turn out to be too challenging • Repeats what has been learned earlier, for instance, by using a short initiation-response-feedback (IRF) sequence in the beginning of (or just before) the episode • Repeats good questions or remarks made by a child in the group for the whole class to reflect on	• Answer the teacher's questions • Listen actively • Participate by offering their own opinions or comments, especially when the topic is close to their own life experiences and interests

Table 3.

Strategies of scaffolding and children's reactions in child-initiated teaching dialogues

Teacher scaffolding strategies	Children's reactions
• Allows room for dialogic space to evolve and actively listens • Asks only a few questions, consisting mainly of follow-up questions to clarify children's comments • Links children's ideas and experiences to moral rules and societal knowledge • Expands on children's comments and summarises the knowledge that has been accumulated • Accepts responses without evaluating them	• Begin the dialogue • Share their thoughts and ideas in balance with the teacher • Listen to each other • The more experience children have related to the topic, the more comfortable they will feel in participating