Design and implementation of dialogic classroom talk in early childhood education: Does it contribute to children’s oral communicative competence?

This chapter is based on:
Abstract
The aims of the present study were to promote dialogic classroom talk in early childhood education and to evaluate what it contributes to children’s oral communicative competence. Using a design-based approach, together with four early childhood teachers we developed and implemented an ecologically valid intervention that supports teachers to use several dialogic talk moves. Discourse analysis of pre- and post-observations of classroom talk revealed that teachers used more dialogic talk moves over the course of our intervention. Pre- and post-tests of children’s ($N = 92$) oral communicative competence indicated that our intervention significantly contributed to their oral communicative abilities. Furthermore, our analysis of pre- and post-observations of classroom talk showed an increase in the use of key linguistic features of oral communicative competence in the participating children. The results of this study show that dialogic classroom talk can be promoted even in early childhood education, and that this might be beneficial for young children’s oral communicative abilities.

5.1 Introduction
Several studies have shown the great potential of dialogic classroom talk in upper-primary and secondary education settings for student’s subject-matter learning (Nystrand & Gamoran, 1991; O’Connor, Michaels, & Chapin, 2015), reasoning skills (Wegerif, Mercer, & Dawes, 1999; Rojas-Drummond, Gómez, & Vélez, 2008), motivation (Kiemer, Gröschner, Pehmer, & Seidel, 2015), and language abilities (van der Veen, de Mey, van Kruistum, & van Oers, 2017). Surprisingly, many classrooms – from early childhood to secondary education - still show a prevalence toward monologic talk that is overly teacher-steered, mainly focused on the recitation of knowledge (for example, Boyd & Kong, 2016; Cazden, 2001; Nystrand, 1997; van der Veen et al., 2017), and gives children only limited opportunities to develop their
language abilities (for example, Dickinson, Darrow, & Tinubu, 2008). Furthermore, most studies that aim to support dialogic classroom talk focus on upper-primary or secondary students and, as a consequence, it remains unclear what the benefits might be of dialogic classroom talk in early childhood classrooms. In the current study, we designed an intervention in close collaboration with teachers through which we aimed to promote dialogically organized classroom talk in early childhood education, with students aged 4-6. Furthermore, we evaluated to what extent dialogic classroom talk contributed to the development of young children’s oral communicative abilities.

**Dialogic classroom talk**

In the majority of today’s classrooms, the interactions among students and teachers is still dominated by recitation. Often times, this takes the form of the well-known Initiation-Response-Evaluation sequence, in which the teacher asks a question, followed by a response of a student (or more students in chorus), after which the teacher evaluates the correctness of this response in terms of right or wrong (see for example, Cazden, 2001; Mehan & Cazden, 2015; Nystrand, 1997). As a consequence, students have limited opportunities to talk and think together. This is problematic, as research has shown that classroom talk that is characterized by teachers asking open questions, and giving children many opportunities to talk and think together – i.e., dialogic classroom talk – is related to children’s learning and development (see for an overview, Howe & Abedin, 2013; Mercer & Dawes, 2014; Resnick, Asterhan, & Clarke, 2015; van der Veen, & van Oers, 2017).

What do we mean by dialogic classroom talk? First, in dialogic classroom talk the interaction between children and their teacher is motivated by a “shared, discussable topic (or object) that gives direction, purpose, and coherence to the dialogue” (van der Veen, Dobber, & van Oers, in press, p. 4). This topic is collaboratively developed by producing and negotiating predicates and linking them to this topic1 (cf. O’Connor & Michaels, 2007; see also, van der Veen, van Kruistum, & Michaels, 2015). Following the work of Doblaev (1984), in this article we use an
interpretation of topic and predicates that focuses on the discourse (or text) level and moves beyond the traditional grammatical interpretation of subject-predicates at the sentence level. Doblaev argued that a text (or discourse) consists of a subject (text-subject) and predicates (text-predicates) as well. On a macro-structural level, the topic of a classroom discussion organizes the information and summarizes what the discussion is about. Furthermore, it gives purpose and direction to the participants of the discussions; it determines what predicates they can link to the topic. According to Vygotsky (1987), linking new predicates to a topic that has a group’s shared attention supports the progress in thinking (see also van Oers, 2012a).

Second, in dialogic classroom talk children are given space to (a) share, expand, and clarify their ideas or positions, (b) carefully listen to one another’s ideas, (c) reason, (d) think together and negotiate meaning, and (e) reflect on their communicative performance and the understandability of their oral messages (Michaels & O’Connor, 2012; van der Veen et al., 2015; 2017). Teachers can create these spaces by moving beyond patterns of recitation and opening-up the dialogue. Previous studies suggest that several talk moves (or tools) may aid this process, as when a teacher encourages children to expand or clarify their ideas (‘Can you say more about it?’), carefully listen to one another (‘Can you repeat what Lisa just said?’), to deepen their reasoning (‘Why do you think that?’), or to think together (‘Do you agree or disagree, and why?’) (Michaels & O’Connor, 2012; van der Veen et al.; 2017). A full overview of the talk moves used in this study is provided in Appendix A.

Third, elsewhere (van der Veen et al., 2015) we have argued that for classroom talk to be dialogic, and accountable for knowledge acquisition, it should also contain elements of a polylogue with knowledgeable, socio-cultural voices that are not physically present in the classroom. Introducing these voices creates opportunities for children to evaluate their ideas within a wider socio-cultural context, and supports children to replace or restructure knowledge that is incorrect or incomplete. In classrooms, these voices are often introduced through information books, an expert in the class, and explanations given by the teacher. According to Dobber and Van Oers
“polylogue is essential for evaluating local dialogical agreements in a wider cultural perspective” (p. 230). For example, in one of our classroom observations a group of children (aged 4-6 years) was discussing the relative distance of several planets to the sun and the earth, and were trying to build a preliminary model of the solar system. At some point, one of the children did not agree with the distance of the planet Mercury to the sun in the model they had built. He explained that he had seen a model in one of the information books in which Mercury was much farther removed from the sun. As the children compared their model with the model in the book, external voices present in the book (in this case, voices from scientists) interacted with the group’s local dialogical agreements, and supported the group’s progress in thinking.

Together, the aforementioned characteristics of dialogic classroom talk provide a framework for teachers that can support them to move towards a sustainable dialogic classroom culture. Although research has shown that dialogic classroom talk is related to children’s learning, much remains unknown about the benefits of dialogic classroom talk for young children, and how to support early childhood teachers to make their classroom interaction more dialogic. As early childhood is considered a critical period for language learning, we argue that young children should be inducted in a language-rich educational environment. This environment should create various opportunities for productive classroom discussion, orchestrated by skillful teachers (cf. Farkas & Beron, 2004; see also van der Veen, van der Wilt, van Kruistum, van Oers, & Michaels, 2017).

**Oral communicative competence**

Much of the research on the effect of dialogic classroom talk has focused on children’s content learning and reasoning skills. In the current study, we aim to add to this research by focusing on the benefits of dialogic classroom talk for the development of young children’s oral communicative competence. Oral communicative competence is a complex construct that consists of a combination of knowledge (e.g., vocabulary,
knowledge of communicative rules), skills (e.g., turn-taking, non-verbal communicative support, listening), and attitudes (e.g., openness). This combination of knowledge, skills, and attitudes “enables a speaker to communicate effectively and appropriately in social contexts” (Schiefelbusch & Pickar, 1984, p. ix; see also Savignon, 1997). Oral communicative competence is considered an important mediator for self-regulation, learning, and thinking (van Oers, Wardekker, Elbers, & van der Veer, 2008; Vygotsky, 1987; Whitebread, Mercer, Howe, & Tolmie, 2013). Furthermore, research has shown that oral communicative competence is related to successful reading comprehension (Snow, 2002), and the degree to which children are accepted by their peers (e.g., Fujiki, Brinton, Hart, & Fitzgerald, 1999; Van der Wilt, van Kruistum, van der Veen, & van Oers, 2016). Given the importance of children’s oral communicative skills for academic learning and social interaction, we argue that children’s oral communication skills should be systematically supported even in early childhood education.

**Current study and research question**

In the current study, our first aim was to design and implement an intervention that promotes dialogic classroom talk in early childhood education. As we wanted our intervention to fit within teachers’ daily classroom practice, we designed the intervention with teachers, and provided them with intensive guidance inside their classrooms. Second, we aimed to evaluate the extent to which the intervention contributed to young children’s oral communicative competence. Using a design-based approach (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003), this study was conducted to answer the following research questions: How can dialogic classroom talk be promoted in early childhood education and what does it contribute to young children’s oral communicative competence?

As dialogic classroom talk provides children with many opportunities to talk and think together, we hypothesize that it significantly contributes to children’s oral communicative competence. Furthermore, we hypothesize that intensive guidance
inside the classroom (cf. van der Veen, Dobber, & van Oers, 2016) will support teachers to become skillful orchestrators of dialogic classroom talk.

5.2 Method

Participants
Four early childhood teachers from two primary education schools in the Netherlands participated in this study. Lotte and Sara from school X with respectively 17 and 27 years of teaching experience; Ellice and Anne from school Y with respectively 10 and 17 years of teaching experience. School X was located in a small village in the northern part of the Netherlands and can be considered a traditional school with innovative elements (such as the use of mind mapping activities in the early childhood classrooms). School Y is an innovative school using a play-based teaching approach inspired by the work of Vygotsky (cf. van Oers, 2012b), and is located in a big city in the western part of the Netherlands. In the Netherlands, separate kindergartens have been abolished since 1985 and are integrated into primary schools. Furthermore, children aged 4-6 years (in the Netherlands grades 1 and 2) are often times mixed in the same class.

A total of 92 children (44.6% girls) participated in the current study. They were aged between 3.8 and 6.3 years with a mean age of 5.08 years (SD = 0.67). Table 5.1 gives an overview of the number of children per classroom, as well as the most important descriptive statistics. Independent-samples t-tests indicated that there were no significant differences between school X and Y for children’s age, sex and oral communicative competence pre-test scores. Before the start of this study, the scientific and ethical review board of our faculty gave ethical approval to conduct the current study. Furthermore, all parents and children were informed about the purpose of the study and asked for their consent. None of the parents withheld their consent.
Table 5.1  
*Descriptive statistics for children’s demographic information for the total sample and the four participating classrooms.*

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Lotte, School X</th>
<th>Sara, School X</th>
<th>Ellice, School Y</th>
<th>Anne, School Y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>92</td>
<td>19</td>
<td>19</td>
<td>29</td>
<td>25</td>
</tr>
<tr>
<td><strong>Age range</strong></td>
<td></td>
<td>3.8-6.3</td>
<td>4.0-6.0</td>
<td>4.0-6.3</td>
<td>3.8-6.2</td>
</tr>
<tr>
<td><strong>M (SD)</strong></td>
<td>5.08 (0.67)</td>
<td>5.05 (0.61)</td>
<td>5.20 (0.69)</td>
<td>5.01 (0.74)</td>
<td>5.10 (0.65)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>44.6%</td>
<td>47.4%</td>
<td>47.4%</td>
<td>41.4%</td>
<td>44.0%</td>
</tr>
<tr>
<td>Boys</td>
<td>55.4%</td>
<td>52.6%</td>
<td>52.6%</td>
<td>58.6%</td>
<td>56.0%</td>
</tr>
</tbody>
</table>

**Design**

In the current study, we used a design-based approach to develop an ecologically valid, innovative intervention that promotes dialogic classroom talk in early childhood education (see Cobb et al., 2003 for an explanation of design-based research). The cyclic character of design-based research allowed us to simultaneously develop and evaluate our intervention in classroom practice. In two iterative cycles, the researchers, graduate students in educational sciences, and the participating teachers collaboratively designed and evaluated dialogic classroom discussions. Furthermore, using pre- and post-tests and pre- and post-observations of classroom talk we aimed to evaluate to what extent our intervention promoted dialogic classroom talk in early childhood teachers, and contributed to the development of children’s oral communicative competence. Following Borko, Jacobs and Koellner (2010), we argue that it is important to start with a relatively small-scaled, exploratory study before implementing and evaluating our intervention on a large-scale.

**Procedure**

To recruit teachers for participation in this study, we sent out an e-mail to schools in our network and sent out a call via social media (i.e., Twitter, LinkedIn). Interested
teachers were visited so more information about the purpose and procedures of the current study could be given.

Teachers orchestrated classroom discussions twice a week: once in a small-group, and once in a whole-group setting. In this article, our analyses will focus on classroom talk in whole-group settings to assure comparability between schools and classrooms. Table 5.2 gives an overview of the timeline of the current study and the different activities per week. Our study started with a pre-observation, in which we asked teachers to orchestrate a whole-group classroom conversation as they would usually do this. Next, the first author of this paper gave a workshop at each school in which the theory of dialogic classroom talk was discussed, teachers were informed about talk tools that could be used to promote dialogic classroom talk (see Appendix A), and video clips of dialogic classroom talk were watched and collaboratively analyzed. Furthermore, segments of the pre-observation were watched and analyzed. Following this workshop, the first four-week cycle of our study started in which all teachers led eight classroom conversations making use of the theory of dialogic classroom talk and the associated talk tools. All classroom conversations were video-recorded. During weekly reflection sessions, the teachers together with the first author of this article evaluated the intervention and watched and collaboratively analyzed segments of the video-recordings of the teachers’ classroom conversations. Furthermore, teachers were encouraged to write individual reflections on the development and implementation of the intervention on dialogic classroom talk in their classroom. The first cycle ended with an interview in which the first four weeks of study were evaluated and the design of the next cycle was discussed. Based on our experiences in this first cycle we fine-tuned the design of our second cycle.

The second cycle started with a follow-up workshop in which the theory of dialogic classroom talk was again discussed, and video clips of dialogic classroom talk were watched and collaboratively analyzed. As in the first cycle, eight classroom conversations were video-recorded for each teacher, followed by weekly reflection
Table 5.2
Timeline of the study

<table>
<thead>
<tr>
<th>Cycle 1</th>
<th>Cycle 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>W 1</td>
<td>W 12</td>
</tr>
<tr>
<td>W 3</td>
<td>W 13-16</td>
</tr>
<tr>
<td>W 4-7</td>
<td>W 17-18</td>
</tr>
<tr>
<td>W 8</td>
<td></td>
</tr>
<tr>
<td>(holiday)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W 1</th>
<th>W 3</th>
<th>W 4-7</th>
<th>W 8</th>
<th>W 9-11</th>
<th>W 12</th>
<th>W 13-16</th>
<th>W 17-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-observation of classroom talk children</td>
<td>Pre-tests</td>
<td>8 observations of classroom talk (4 whole class / 4 small group) and weekly reflection sessions</td>
<td>Post-tests children</td>
<td>8 observations of classroom talk (4 whole class / 4 small group) and weekly reflection session</td>
<td>Pre-interview teachers</td>
<td>Workshop teachers</td>
<td>Post-interview teachers</td>
</tr>
</tbody>
</table>

**Note.** In this article, we do not report on the teacher interviews. W = week, OCC = oral communicative competence
sessions. The second cycle ended with a final interview in which the whole study was evaluated.

All children were individually tested on their oral communicative competence before (pre/t1) and after the first cycle (post/t2) and within two weeks after the intervention (post-post/t3). Children were tested inside their own school at a quiet place closely to their classroom. Administration of the tests was done by one of the trained test-assistants and took approximately 20 minutes per child. All tests were audiotaped so they could be scored afterwards.

**Measures**

*Promoting dialogic classroom talk*

To analyze to what extent teachers were able to use dialogic talk moves in classroom talk, we used video-observations of whole-group classroom talk on two occasions. The classroom conversation prior to the intervention (see week 1 in Table 5.2) was used as a pre-observation (or pre-measure); the final whole-group classroom conversation in the second cycle (see week 13-16 in Table 5.2) was used as a post-observation (or post-measure). First, for each classroom conversation we calculated teachers’ Mean Length Turn (MLT). MLT indicates how many words teachers used per turn on average. A high MLT might indicate that a teacher is more strongly dominating and steering the conversation. Second, all teacher turns were coded for one of the dialogic talk moves. In Appendix A, an overview of the dialogic talk moves that were used in coding our data is provided.

*Oral communicative competence*

As mentioned before, oral communicative competence is a complex and multifaceted construct that is difficult to measure in its totality. For practical reasons of time and feasibility, in this study we focus only on a few aspects of children’s oral communicative competence. To this end, we used both individual pre- and posttest
as well as pre- and post-observations of whole-group classroom talk to examine to what extent dialogic classroom talk contributed to children's oral communicative competence.

Oral communicative competence: individual level
The Nijmegen Test of Pragmatics (NPT; Embrechts, Mugge, & van Bon, 2005) was used to measure children’s oral communicative competence individually. The NPT has been found to be a reliable and valid instrument (Cronbach’s alpha = 0.92 in Embrechts et al., 2005; Omega = 0.91, GLB = 0.94, Cronbach’s alpha = 0.91 in van der Veen et al., 2017) to measure young children’s (4-7 year olds) communicative abilities verbally using a standardized protocol. A model of a house, nine richly illustrated pictures related to the different rooms in the house, and a story about the family living in the house were used to elicit different communicative and conversational responses (for example, test leader: “Would you want to live in a house like this?”). The test used in this study consisted of 37 items that were dichotomously scored (in case of the previous example: “No response or inadequate response” = 0; “The child gives an explanation, such as “Yes, because the house has many rooms” = 1).

Oral communicative competence: group level
Next to individual measures of children’s oral communicative competence, we used discourse analysis to evaluate differences in children’s communicative abilities between pre- and post-observations of whole-group classroom talk. In our analysis, we followed the procedures proposed by Wegerif et al. (1999). We refer to this measure as a group level measure of children’s oral communicative competence, as we used whole-group discourse characteristics to evaluate differences over time and between classrooms. Our analyses focused on three (linguistic) features that we argue to be related to dialogic classroom talk in general and children’s oral communicative abilities in specific: (a) child participation, (b) mean length turn, and (c) key linguistic
features of oral communicative competence. Below, we will briefly describe the linguistic features that were used in this study.

**Child participation.** Children’s relative participation was measured based on the number of child turns per classroom conversation divided by the sum of child and teacher turns (cf. Crain-Thoreson & Dale, 1999). An increase in the level of children’s relative participation indicates that children have more space to talk and, consequently, to practice their oral communicative abilities.

**Mean length turn (MLT).** MLT indicates how many words children used per turn on average. A high MLT indicates that children produced more complex syntax and gives an indication of children’s participation in classroom conversations (cf. Fagan & Iglesias, 2000). Consequently, an increase in MLT might be an indication of improvement in children’s oral communicative competence. Furthermore, we calculated children’s MLT per minute to control for the difference in the length between classroom conversations. Finally, we calculated the number of ‘long turns’ for each classroom discussion using a cut-off point of the 10% longest turns for our total data set (cf. Wegerif et al., 1999). An increase in the number of ‘long turns’ might be another indication of more elaborate talk.

**Key linguistic features of oral communicative competence.** Following the procedures proposed by Wegerif et al. (1999; see also, Boyd & Kong, 2015; Soter, Wilkinson, Murphy, Rudge, Reninger, & Edwards, 2008), key linguistic features of oral communicative competence were analyzed. An important aspect of oral communicative competence is children’s abilities to effectively communicate their thoughts and ideas and ‘work’ their way towards shared understanding (see also Alexander, 2012; van der Veen et al., 2015). In doing so, children make use of specific linguistic features that support them to communicate their thoughts and ideas. For example, they use reasoning words (such as ‘because’) to link a reason to an assertion
in order to clarify or support their initial thought or idea. Consequently, this leads to longer utterances and more complex syntax (Wegerif et al., 1999). Furthermore, children make metalinguistic comments about meaning – using forms of the verb ‘to mean’ (as in, for example, “No, I meant...”) - to convey meaning or comment on meaning and move towards shared understanding. The following key linguistic features of oral communicative competence were seen as indicative of (improved) oral communicative competence and dialogic classroom talk: (a) because, (b), (I) think..., (c) (I/she/he) mean(s)..., (d) So..., (e) but, (f) if...then, (g) maybe/might, (h) Why?

Analyses
To analyze our video-data, transcriptions of pre- and post-observations of whole-group classroom talk were made using Transana version 3.00 (Woods & Fassnacht, 2017). Next, full transcripts were imported into Atlas.ti version 1.0.50 for further analysis. Children’s individual oral communicative competence scores were analyzed using IBM’s Statistical Package for the Social Science (SPSS) version 23.

Promoting dialogic classroom talk
In the full transcripts, each teacher turn was evaluated using our model of dialogic classroom talk (see Appendix A). Frequencies of the different dialogic talk moves as a percentage of the total number of teacher turns were calculated. Finally, differences between measurement occasion and between classrooms were evaluated using a Wilcoxon signed-rank test and analysis of variance.

Oral communicative competence: individual level
Q-Q-plots indicated our sample was not normally distributed. Therefore, differences in children’s oral communicative competence scores on all three measurement occasions were analyzed using the Friedman test. Post-hoc analysis with Wilcoxon signed-rank tests were conducted to evaluate children’s progression between t1-t2, t2-
t3, and t1-t3. Bonferroni correction was used resulting in a confidence level set at 98.33%.

Oral communicative competence: group level
Full transcripts were used to evaluate differences in children’s communicative abilities between pre- and post-observations. First, all child turns were marked to calculate children’s relative participation, mean length of turn and the number of ‘long turns’. Next, transcripts were coded for key linguistic features of oral communicative competence (see Table 5.3). Finally, differences between measurement occasions for the aforementioned linguistic features of oral communicative competence were analyzed using Wilcoxon signed-ranked tests, and analysis of variance.

5.3 Results

Promoting dialogic classroom talk
An overview of the main characteristics (i.e., topic, duration, talk format) of the pre- and post-observations of conversations that teachers orchestrated in the context of this study can be found in Table 5.3. On average, the pre-observations discussion lasted 26.81 min.; the post-observations discussion had an average length of 26.87 min. As a first step, we compared teachers’ MLT in words between pre- and post-observation. Using a Wilcoxon signed-rank test, our analysis showed that teachers’ MLT was lower in the post-observation ($M = 13.61, SD = 2.20$) compared to the pre-observation ($M = 15.86, SD = 15.04$). However, this difference was not statistically significant, $z = -1.46, p = 0.14$. Furthermore, the number of teacher turns per minute did not differ between measurement occasions either, $z = -0.37, p = 0.72$. 
<table>
<thead>
<tr>
<th></th>
<th>Lotte, School X</th>
<th>Sara, School X</th>
<th>Ellice, School Y</th>
<th>Anne, School Y</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What can be found in your barn?</td>
<td>What is a superhero?</td>
<td>Ladybugs: poisonous or not?</td>
<td>Where do you want to live?</td>
<td>How does a caterpillar turn into a butterfly?</td>
</tr>
<tr>
<td>Playing soccer.</td>
<td>Experiment: pigment in paint; what will happen?</td>
<td>Playing soccer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 min, 32 sec</td>
<td>28 min, 5 sec</td>
<td>18 min, 16 sec</td>
<td>36 min, 22 sec</td>
</tr>
<tr>
<td><strong>Length of conversation</strong></td>
<td>Whole-group</td>
<td>Whole-group</td>
<td>Whole-group</td>
<td>Whole-group</td>
</tr>
<tr>
<td>126/278</td>
<td>279/498</td>
<td>297/520</td>
<td>178/282</td>
<td>196/349</td>
</tr>
<tr>
<td>45.3%</td>
<td>56.0%</td>
<td>63.1%</td>
<td>56.2%</td>
<td>65.2%</td>
</tr>
<tr>
<td><strong>Teacher turns per min</strong></td>
<td>6.20</td>
<td>7.94</td>
<td>5.19</td>
<td>4.21</td>
</tr>
<tr>
<td><strong>Child turns per min</strong></td>
<td>8.55</td>
<td>8.89</td>
<td>8.69</td>
<td>6.21</td>
</tr>
<tr>
<td><strong>Child participation</strong></td>
<td>0.45</td>
<td>0.57</td>
<td>0.63</td>
<td>0.59</td>
</tr>
<tr>
<td><strong>Teacher participation</strong></td>
<td>0.56</td>
<td>0.63</td>
<td>0.63</td>
<td>0.56</td>
</tr>
<tr>
<td><strong>MLT teacher</strong></td>
<td>16.05</td>
<td>13.35</td>
<td>11.66</td>
<td>16.41</td>
</tr>
<tr>
<td><strong>MLT children</strong></td>
<td>6.18</td>
<td>5.84</td>
<td>3.23</td>
<td>4.95</td>
</tr>
</tbody>
</table>
### Number of long child turns (≥ 13 words)

<table>
<thead>
<tr>
<th></th>
<th>16</th>
<th>36</th>
<th>6</th>
<th>22</th>
<th>19</th>
<th>46</th>
<th>12</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>24</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>(I) think...</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>(I/she/he mean(s)...</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>So... ,</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>But</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>18</td>
<td>10</td>
<td>20</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>If... (then)</td>
<td>3</td>
<td>12</td>
<td>6</td>
<td>12</td>
<td>3</td>
<td>14</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Maybe/ might</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Why?</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
<td>30</td>
<td>18</td>
<td>35</td>
<td>27</td>
<td>103</td>
<td>26</td>
<td>28</td>
</tr>
</tbody>
</table>

**Note.** Child participation was calculated by dividing the total number of child turns with the sum of child and teacher turns, **MLT** = mean length turn.
Second, a comparison of the teachers’ use of the dialogic talk moves between pre- and post-observation gave us preliminary evidence that our intervention might have supported teachers to take up these talk tools (see Figure 5.1 and Figure 5.2). In Table 5.4, the number of dialogic talk moves per category that teachers used in facilitating classroom conversations, separated per classroom and measurement occasion, is shown. We performed a Wilcoxon signed-rank test on the number of dialogic talk moves per category (see Figure 5.2) in the pre- and post-observation. This showed a significant increase in the number of dialogic talk moves used between both measurement occasions, $z = -2.02, p = 0.04$.

Table 5.4

*Use of teacher talk moves for dialogic classroom talk in the pre- and post-observations for the total sample and separated per classroom*

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Lotte, School X</th>
<th>Sara, School X</th>
<th>Ellice, School Y</th>
<th>Anne, School Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>Share, expand, clarify</td>
<td>68</td>
<td>119</td>
<td>13</td>
<td>55</td>
<td>14</td>
</tr>
<tr>
<td>Listen to one another</td>
<td>3</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Reasoning</td>
<td>34</td>
<td>42</td>
<td>0</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Think with others</td>
<td>5</td>
<td>13</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Metacomunication</td>
<td>6</td>
<td>35</td>
<td>1</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>116/214/</td>
<td>14/75/</td>
<td>22/</td>
<td>24/</td>
<td>45/63/</td>
</tr>
</tbody>
</table>

Third, our results (see Figure 5.2) indicate that not all the dialogic talk moves were equally taken up by the participating teachers. From pre- to post-observation, the
Figure 5.1. Comparison of the four participating teachers’ use of dialogic talk moves before and after the intervention shown in percentages of the total number of teacher turns

Figure 5.2. Teachers use of the dialogic talk moves separated by category and measurement occasion in percentages of the total number of teacher turns

largest gains (i.e., post – pre) in uptake of the dialogic talk moves were found for category 1 (encouraging children to share, expand, or clarify their ideas) and category 5 (encouraging children to reflect on their communicative performance). Gain scores
were respectively 8.43 and 4.82. Furthermore, Figure 5.2 shows that category 2 (encouraging children to listen to one another) was hardly taken up by the participating teachers.

Finally, our results indicate that teachers differed in the extent to which they seem to have benefitted from the intervention. For example, teacher Ellice from school Y was already using many dialogic talk moves at the outset and, on average, showed a decrease in her use of dialogic talk moves from pre- to post-observation (percentage of dialogic talk moves went from 60.43% to 46.67%). Furthermore, some teachers showed mainly gains in the uptake of one specific category of talk moves. For example, teacher Lotte from school X showed the largest increase in uptake for category 1 (encouraging children to share, expand, or clarify their ideas). Although differences in uptake of the dialogic talk moves between teachers most likely will exist, an analysis of variance indicated that these differences were not statistically significant, $F(3) = 0.87, p = 0.48$.

**Oral communicative competence: individual level**

In Table 5.5, the descriptive statistics of children’s individual oral communicative competence scores are presented with separate columns for the total group and each classroom.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Lotte, School X</th>
<th>Sara, School X</th>
<th>Ellice, School Y</th>
<th>Anne, School Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCC $t_1$ M (SD)</td>
<td>26.60 (6.50)</td>
<td>24.66 (7.19)</td>
<td>26.78 (6.56)</td>
<td>25.21 (6.79)</td>
<td>29.53 (4.60)</td>
</tr>
<tr>
<td>OCC $t_2$ M (SD)</td>
<td>28.72 (6.15)</td>
<td>26.00 (5.33)</td>
<td>29.79 (5.83)</td>
<td>27.62 (7.64)</td>
<td>31.24 (3.70)</td>
</tr>
<tr>
<td>OCC $t_3$ M (SD)</td>
<td>30.41 (5.80)</td>
<td>28.56 (5.85)</td>
<td>29.68 (7.62)</td>
<td>30.69 (6.11)</td>
<td>31.96 (3.05)</td>
</tr>
</tbody>
</table>
The Friedman test indicated there was a significant difference in children’s oral communicative competence scores depending on measurement occasion, $\chi^2(2) = 62.22, p < 0.001$. Wilcoxon signed-rank tests were conducted to evaluate whether children progressed in their oral communicative competence between each measurement occasion. Means and SD’s for each occasion are presented in Table 5.6. All comparisons yielded significant differences, indicating that children progressed in their oral communicative competence over the course of the intervention: $t_1-t_2, z = -4.74, p < 0.001$; $t_2-t_3, z = -4.55, p < 0.001$; $t_1-t_3, z = -6.46, p < 0.001$. Effect sizes ($r$) were respectively 0.35 (medium to large), 0.34 (medium to large) and 0.48 (large).

Table 5.6

<table>
<thead>
<tr>
<th>Time of measurement</th>
<th>$M$</th>
<th>$SD$</th>
<th>Effect size $r$</th>
<th>Ranks (positive, tie, negative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>t1 (week 3)</td>
<td>26.60</td>
<td>6.50</td>
<td>0.35</td>
<td>69 +; 0 ties; 23 -</td>
</tr>
<tr>
<td>t2 (week 8)</td>
<td>28.72</td>
<td>6.15</td>
<td>0.48</td>
<td>76 +; 1 ties; 15 -</td>
</tr>
<tr>
<td>t3 (week 17/18)</td>
<td>30.41</td>
<td>5.80</td>
<td>0.34</td>
<td>63 +; 9 ties; 20 -</td>
</tr>
</tbody>
</table>

**Oral communicative competence: group level**

In Table 5.3, an overview is given of the key linguistic features of oral communicative competence with separate columns for each classroom and measurement occasion (i.e., pre- and post-observation).

First, we compared children’s relative participation between pre- and post-observation. Although on average children participated slightly more in classroom talk in the post-observation ($M = 0.59, SD = 0.04$) compared to the pre-observation
(\(M = 0.53, SD = 0.05\)), a Wilcoxon signed-rank test indicated this difference was not statistically significant, \(z = -1.46, p = 0.14\).

Second, we compared children’s MLT between pre- and post-observation. Using a Wilcoxon signed-rank test, our analysis showed that children’s MLT was higher in the post-observation (\(M = 6.42, SD = 7.65\)) compared to the pre-observation (\(M = 4.84, SD = 6.30\)), \(z = -5.87, p < 0.001\). On average, children used significantly more words per turn in the post-observation. Differences between classrooms and measurement occasion are presented in Figure 5.3. Furthermore, we compared the number of children’s ‘long turns’ between pre- and post-observations of classroom talk using a cut-off point of the 10 per cent longest turns for our total data set (i.e., turns equal to or larger than 13 words).

Figure 5.3. A comparison of children’s Mean Length Turn (MLT) in words between pre- and post-observations for the total sample and separated per classroom

All children’s turns were dummy coded (1 = long turn; 0 = no-long turn). A Wilcoxon signed-rank test indicated that children used more ‘long turns’ in the post-observation (\(M = 0.14, SD = 0.35\)), compared to the pre-observation (\(M = 0.08, SD = 0.26\)), \(z = -4.14\),
$p < 0.001$. In Figure 5.4, an overview of the differences in the number of ‘long turns’ between classrooms and measurement occasion is presented.

**Figure 5.4.** A comparison of the number of children’s ‘long turns’ between pre- and post-observations of classroom talk for the total sample and separated per classroom

![Graph showing long turns per classroom](image)

**Figure 5.5.** A comparison of the average number of children’s turns per minute between pre- and post-observations of classroom talk for the total sample and separated per classroom

![Graph showing turns per minute per classroom](image)
Third, we compared the number of child turns per minute – in order to control for the difference in length between each classroom discussion – between measurement occasion. Figure 5.5 shows that the number of child turns per minute differed between pre- and post-observation. On average, the number of children’s turns per minute was higher in the post-observation (i.e., 8.09 turns per minute) compared to the pre-observation (i.e., 6.41 turns per minute). This difference was not statistically significant, $z = -1.10, p = 0.27$.

Finally, we compared the use of children’s key linguistic features of oral communicative competence between measurement occasions and classrooms. Figure 5.6 gives an overview of the frequency of the different key linguistic features separated by measurement occasion. A Wilcoxon signed-rank test revealed that there was a significant difference in the frequency of key linguistic features used between pre- ($M = 2.41, SD = 3.84$) and post-observations ($M = 6.13, SD = 7.64$), $z = -3.20, p = 0.001$. Next, we performed analyses of variance to explore differences between classrooms on both

Figure 5.6. Frequency of key linguistic features of oral communicative competence
the pre-observation and post-observation. No differences between classrooms were found in the pre-observation, $F(3) = 0.78$, $p = 0.52$, indicating that children in the participating classrooms did not differ significantly in the number of key linguistic features they used. However, classrooms differed significantly in the frequency of key linguistic features in the post-observation, $F(3) = 3.46$, $p = 0.03$.

To summarize, at the level of teachers our analyses revealed that (1) their MLT was lower in the post-observation (although not statistically significant), (2) they used significantly more dialogic talk moves over the course of our intervention, and (3) not all categories of dialogic talk moves were equally taken up. With respect to the children our analyses showed that (1) they progressed in their oral communicative competence during the intervention as measured with a standardized test, (2) they used more words per turn (MLT) and more ‘long turns’ in the post-observation, and (3) they used more key linguistic features of oral communicative competence in the post-observation.

### 5.4 Discussion

In the current study, we designed and evaluated an intervention that aimed to promote dialogic classroom talk in early childhood education. Analyses of pre- and post-observations of classroom talk suggest that teachers were able to use several dialogic talk moves over the course of our intervention to orchestrate classroom talk; the frequency of dialogic talk moves used by teachers was higher in the post-observation. A significant increase in the use of dialogic talk moves might indicate that the participating teachers gave children more space to talk, listen, reason, and think together. This is supported by our finding that, on average, teachers’ MLT was lower and children’s MLT was higher in the post-observation.

Not surprisingly, there are differences between teachers in how they implemented the intervention in their classrooms, and appropriated the dialogic talk
moves (see Figure 5.1). These differences might be explained based on the schools’ different pedagogical approaches, and the fact that both schools attracted students from different socio-economic backgrounds. School X is a traditional school located in a small village with mainly children from low-income families. Teachers in school X used a traditional curriculum, and the interaction before the intervention in their classroom could be characterized as largely monologic. This might explain why they used a lower percentage of dialogic talk moves in the pre-observation compared to teachers from school Y. School Y, on the other hand, is an innovative school that has been working with a play-based, Vygotskian-inspired curriculum (van Oers, 2012b) for more than five years. In this approach, teachers and children are already used to frequent classroom conversations on various topics. This might explain the relatively high percentages of dialogic talk moves that the teachers in school Y used at the outset. Furthermore, school Y is located in a big city, and mainly attracts children from high-income families. This could explain why children in school Y used more key linguistic features of oral communicative competence in the pre-observation.

Our findings also indicated that not all categories of dialogic talk moves were equally taken up by the participating teachers. In total, teachers used the second category of talk moves (encouraging children to listen to one another) only five times in the post-observation. This is in line with the findings of the study by O’Connor et al. (2015). How can this low use of this category of talk moves be explained? One possible explanation might be that this category of talk moves “is not often used in adult conversation and carries with it problematic positioning for some teachers” (O’Connor et al., 2015, p. 344). In their daily life, teachers (and children) are simply not used to encouraging others to listen to one another by saying ‘Who can repeat what he/she just said?’ However, given the importance of this category of talk moves in building a dialogic classroom culture in which children listen to one another, the results of both the O’Connor et al. (2015) and the current study indicate that more work needs to be done with this move in professional development with teachers. All-
in-all, the results of this study suggest that our intervention supported teachers to give children more space to talk, listen, reason, and think together.

With respect to the children, our analyses yielded several interesting results. First, comparisons of children’s oral communicative competence scores on three different measurement occasions indicated that our intervention had a significant effect (with medium to large effect sizes) on children’s oral communicative abilities. This result is also supported by discourse analysis of classroom talk before and after the intervention. For example, our analyses showed that children used significantly more words (MLT) and took more ‘long turns’ (i.e., turns equal to or larger than 13 words) in the post-observation. This indicates that children produced more complex syntax (Fagan & Iglesias, 2000), and were give more space to participate and talk. This increase in children’s participation and space to talk, could indicate that they had more opportunities to practice the different facets of their oral communicative competence (for example, turn-taking, negotiating meaning, etc.). Next, teachers used more metacommunicative moves in the post-observation. This might indicate that, over the course of our intervention, children were more frequently encouraged to reflect on their communicative performance, and received more feedback on their oral communicative competence by their teachers. Related to this is our finding that children used significantly more key linguistic features of oral communicative competence in the post-observation compared to the pre-observation. Following Wegerif et al. (1999; see also Soter et al., 2008), this increase in key linguistic features (such as ‘because’, ‘I mean…’, and ‘but’) could indicate that children’s abilities to communicate their ideas effectively and ‘work’ their way towards shared understanding improved over the course of our intervention.

The findings of the current study add to previous research on the benefits of dialogically organized classroom talk for children’s learning and development (see for example, Kiemer et al., 2015; Nystrand & Gamoran, 1991; Wegerif et al., 1999), and shows that even children in early childhood education can benefit from dialogically organized classroom talk.
Limitations and directions for future research

Although this study shows that it is possible to promote dialogic classroom talk in early childhood classrooms, it suffers from a number of limitations as well. First, participating teachers could select the topics for their classroom discussions themselves. Although this might be an advantage in terms of motivation and agency, it caused much variation in the topics of classroom discussions (both between and within classrooms). As we have argued before, it is important that teachers strategically select a ‘discussable’ topic for classroom discussion (van der Veen et al., 2015). An interesting and discussable topic gives purpose to the conversation and might motivate children to engage in discussion. Teachers’ free-choice in selecting the topics in the context of this study might have caused variations in children’s levels of engagement and motivation. Therefore, we suggest that future studies should give teachers either less freedom in selecting the topics of discussion in order to ensure comparability between teachers (and/or conditions) (see for example the in vivo study by O’Connor et al., 2015); or to support teachers in selecting interesting and discussable topics.

Second, Mercer (2008) has already argued that research should pay more attention to the temporal dimension of classroom talk. However, in this study we only used two observations of classroom talk (i.e., pre- and post) to analyze differences in teachers’ uptake of dialogic talk moves, and children’s use of key linguistic features of oral communicative competence. Although our analyses indicate that teachers made their classroom interaction more dialogic and children improved their oral communicative competence, it remains unclear how this developed over the course of our intervention. Therefore, we suggest that future studies should use a longitudinal design to understand how dialogic classroom talk unfolds over time. This research could, for example, focus on how moving towards a dialogic classroom culture changes teacher-child interaction over time, and how this supports children’s new ways of thinking together and using language. Longitudinal studies on dialogic classroom talk could also increase our understanding of the relation between
particular categories of dialogic talk moves and children’s learning, concept formation, motivation, and changing dispositions (see also, O’Connor et al., 2015).

Finally, in this study we used a relatively small sample of two schools, four teachers, and 92 children. This enabled us to study the implementation and enactment of dialogic classroom talk in greater detail. However, the low number of participating teachers influenced the power of the statistical tests that we used to detect differences between teachers. Furthermore, the exploratory design of the current study – i.e., no comparison group was used - does not allow us to determine to what extent changes in educational practice, and children’s oral communicative competence are attributable to our intervention. The results of this study should, therefore, be interpreted with caution and cannot be generalized. Nevertheless, we do believe that the current study might advance the research field and educational practice in multiple ways: (a) it provides insights for researchers and teacher educators interested in implementing dialogic classroom talk in early childhood classrooms; (b) it shows how multiple methods (i.e., quantitative analyses and discourse analysis) can be mixed (cf. Creswell & Clark, 2007) to study the benefits of dialogic classroom talk for children’s (language) learning; (c) the results suggest that even very young children have the ability to engage in dialogic classroom talk, and that their participation in dialogic talk might support their oral communicative competence.

It is our hope, in line with Borko, Jacobs, and Koellner (2010), that the results of the current small-scaled, exploratory study are the starting point for implementing and evaluating dialogic classroom talk in early childhood education on a large scale.
References


CHAPTER 5


