Chapter 11
The Importance of Professional Knowledge for Learning Support in German ECEC Settings

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Interactions in Early Childhood Education and Care (ECEC) Settings

The Importance of Interactions in ECEC Settings

An essential aim of German teachers[1] in ECEC settings is to support infant and child development and learning. It is registered in the UN Convention on the Rights of the Child that children need affinity, attachment and learning opportunities. Teachers have to establish good relationships and to support children's learning appropriately.

Numerous international studies have shown that quality of child care settings influences the development and learning of children in a large range of developmental domains (see for instance, the meta study of Burchinal et al. 2011; and NUBBEK study of Tietze et al. 2013). The extent to which early child education and care experiences are related to child outcomes is generally modest. But quality of teacher-child-interactions shows stronger associations with child development than other measures of child care quality (Burchinal et al. 2011). Therefore, most recently, research has focused more and more on aspects of process quality. In various studies, higher quality teacher-child-interactions were related to higher levels of social-

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[1] In this book we will use the term teacher, even if in Germany vocational trained educators (Erzieher) are the professionals most prevalent in ECEC settings. Please, refer also to the introduction chapter for further explanations of the different systems and qualifications in Germany and New Zealand.

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emotional and academic development in children (e.g. Anders et al. 2012; Sylva et al. 2010; Mashburn et al. 2008). Findings show that the teacher-child-interaction is a key element in children's development and learning in ECEC settings.

For German and international ECEC settings research has shown only modest levels of process quality (e.g. Tietze et al. 2013; Anders et al. 2012; Sylva et al. 2010; Mashburn et al. 2008). In particular, the quality of instructional support has been found to be extremely low (von Suchodoletz et al. 2014; Wildgruber et al. 2014; Kammermeyer et al. 2013) and effective strategies of learning support were rarely encountered in everyday interactions in ECEC settings (e.g. Anders et al. 2012; König 2009; Siraj-Blatchford and Manni 2008). These findings are particularly important, because of evidence that only high quality interactions show lasting positive effects related to children's development (Burchinal et al. 2011; Siraj-Blatchford et al. 2002; Sammons et al. 2008). Thus it is clearly important to conduct research in this area and to further professional development concerning process quality and in particular interactional strategies in ECEC.

Therefore this article focuses on the relationships between interaction strategies of ECEC teachers that support effective child learning on the one hand, and the professional knowledge connected with higher levels of learning support in preschool teachers on the other hand.

Learning Support Strategies in ECEC Settings

Many studies have found a relationship between specific interaction strategies and positive development of children's capabilities. The use of open-ended questions is known to be an effective strategy to enforce children's academic and linguistic knowledge (e.g. Siraj-Blatchford et al. 2002). Whitehurst et al. (1994) also validated these correlations for dialogic reading. But in various studies involving preschool interactions, open-ended questions are rarely found (Siraj-Blatchford and Manni 2008; König 2009; Briedigkeit 2011; Tournier et al. 2014).

The use of methods to encourage higher-order thinking skills (e.g. sustained shared thinking, concept development strategies) is related to better outcomes of verbal, cognitive and social skills in children (Wharton-McDonald et al. 1998; Siraj-Blatchford et al. 2002; Taylor et al. 2003). But again, these strategies are not often seen in daily routines (Siraj-Blatchford et al. 2002; König 2009; Anders et al. 2012). And last, but not least orientation towards children's interests and motivation as well as free choice of activities shows a correlation with developmental progress in children (Siraj-Blatchford et al. 2002).

But it is not only quality of interaction that matters. Frequency of verbal interaction between teachers and children is important for child development, too (Ruopp et al. 1979; Carew and Clarke-Stewart 1980; McCartney 1984; Howes and Rubenstein 1985; Melhuish et al. 1990). Children only can increase their language skills if they have enough opportunities to hear and use language.

International research overall shows the importance of teacher-child-interaction in ECEC settings for learning and development in children. Associations were found between higher quality interactions and cognitive, linguistic and social competences of children (e.g. Mashburn et al. 2008; Cadima et al. 2010). In addition

Burchinal et al. (2010) found that only a high interaction quality had long-term positive effects.

The BIKE[2]-Study

The BIKE-study examines the quality of teacher-child interactions in ECEC settings and relationships between structural conditions, attitudes and knowledge of the ECEC staff, and interaction quality.

The BIKE-study refers to the CLASS-model of interaction quality (Pianta et al. 2008). The aim is to generate recommendations and methods to improve education and professional development and structural conditions in ECEC centers based on empirical data. Leading questions of the study are:

1. What quality level is seen in German ECEC settings in the domains Emotional Support, Classroom Organization and Instructional Support?
2. What correlations exist between conditional factors and interaction quality?

In this chapter the following questions are considered more closely:

- What capabilities do German ECEC teachers show in planning supportive activities for language learning?
- Are capabilities in planning supportive activities for language learning related to interaction quality?

Methods of the BIKE-Study

The analyses include data from two data collection waves, which were carried out from April 2013 to July 2014 in 46 ECEC centers with children from three to six years of age. 85 teachers from 46 ECEC centers in the south of Germany (state of Bavaria) participated. The sample of ECEC settings is a stratified random sample from four cities, stratified by service providers. Teachers participated voluntarily.

All participant teachers worked with children from three to six years of age, were female, and had an average age of 39.38 years (SD = 10.92), 14 years of professional experience (M = 13.75; SD = 10.18) and were employed in the observed ECEC setting more than seven years (M = 7.18; SD = 6.85). The average number of children per group was 22 children (M = 22.34; SD = 4.36), mostly supervised by two teachers, a common ratio of staff to children in Bavarian ECEC settings for three to six year old children.

[2] BIKE = Bedingungsfaktoren für gelingende Interaktionen zwischen Erzieherinnen und Kindern – Conditional factors of successful teacher-child interactions.

Seventy seven (90.61%) of the 85 teachers were trained in post-secondary vocational schools, eight (9.4%) teachers had university degrees. In Germany most of the teachers in ECEC settings have no university degree, but in general a mostly three or four-year course of study at a post-secondary vocational school specialising in social pedagogy (Fachschule/Fachakademie – such as Colleges of Education), leading to an award as a state-registered teacher (Erzieher/in – educator).

The Classroom Assessment Scoring System Pre-K (CLASS Pre-K)

The Classroom Assessment Scoring System Pre-K (Pianta et al. 2008) was used for the live observations in the ECEC settings. The CLASS Pre-K includes ten dimensions of classroom quality, sorted in three domains based on factor analyses (Pianta et al. 2008). The dimensions are rated on a 7-point scale with 1–2 indicating a low, 3–5 an average and 6–7 a high level of quality.

The first domain, *Emotional Support*, focuses on the emotional climate in the classroom. It comprises the dimensions Positive Climate, Negative Climate, Teacher Sensitivity and Regard for Student Perspectives. The second domain, *Classroom Organization*, comprises the dimensions Behavioral Management, Productivity and Instructional Learning Formats. In the last domain, *Instructional Support*, learning support is assessed in the dimensions Concept Development, Quality of Feedback and Language Modeling. These dimensions are operationalized by specific "indicators" and "behavioral markers" that describe specific interactional behavior between teachers and children and among children. The following Table 11.1 presents the main contents of the CLASS Pre-K domains and dimensions.

The CLASS Pre-K was developed for observations in ECEC settings for children three to six years of age and for transition classes like the so called kindergarten in the United States of America. The observational tool CLASS Pre-K shows good prognostic validity in international studies (e.g. Mashburn et al. 2008; Burchinal et al. 2011; Leyva et al. 2015), which means that the studies found correlations with child outcomes. The CLASS Pre-K is a well evaluated tool for standardized observations using a 7-point scale to measure the process quality in interactions of teacher-child-interactions in ECEC settings. The factor structure and instrument quality was tested in over 4300 classrooms in the USA (Hamre et al. 2013) and also in two German studies (von Suchodoletz et al. 2014; Stuck et al. in press). In Europe the CLASS Pre-K has also been used in Finnish, Dutch and Portuguese Studies (Slot 2014; Pakarinen et al. 2010; Cadima et al. 2010), therefore it is possible to compare results from the instrument with other European studies.

The observers collected data across approximately five cycles per classroom, each consisting of circa 20 minutes observation plus 10 minutes scoring. The observations typically started with the morning circle time and ended after lunch. Teacher-child interactions were assessed across a variety of different settings and activities included in daily routines. For every cycle, the predominant type of activity (e.g. circle time, free play, mealtime), duration and number of participating teachers and children was noted. The most frequently observed activities were free play (indoors and outdoors), moderated activities like book reading and mealtimes.

All observers were trained in using the CLASS Pre-K and had successfully passed the required reliability test, this means every observer was able to show once

Table 11.1 Domains and dimensions of the CLASS Pre-K (Pianta et al. 2008)

Domain	Dimension	Description
Emotional Support	Positive Climate	Reflects the emotional connection between the teacher and students and among students and the warmth, respect, and enjoyment by verbal and nonverbal interactions
	Negative Climate	Reflects the overall level of expressed negativity in the classroom
	Teacher Sensitivity	Encompasses the teacher's awareness of and responsibility to students' academic and emotional needs
	Regard for Student Perspectives	Captures the degree to which the teacher's interactions with student and classroom activities place an emphasis on students' interests, motivations, and points of view
Classroom Organization	Behavioral Management	Encompasses the teacher's ability to provide clear behavioral expectations and use effective methods to prevent and redirect misbehavior
	Productivity	Considers how well the teacher manages instructional time and routines and provides activities for students so that they have the opportunity to be involved in learning activities
	Instructional Learning Formats	Focuses on the ways in which the teacher maximizes student's interest, engagement, and ability to learn from lessons and activities
Instructional Support	Concept Development	Measures the teacher's use of instructional discussions and activities to promote students' higher order thinking skills and cognition and the teacher focus on understanding rather than on rote instruction
	Quality of Feedback	Assesses the degree to which the teacher provides feedback that expands learning and understanding and encourages continued participation
	Language Modeling	Captures the quality and amount of the teachers' use of language-stimulation and language-facilitation techniques

a year that he or she was still able to code accurately. In sum 17.8% of the observed cycles were rated twice. The inter-rater reliability, the degree of concordance among raters, was analysed using Intra-Class-Correlations (ICC) and had an overall score of ICC = 0.70 (single measure). The ICC score varied from 0.65 to 0.78 between the dimensions. The following analyses are based on the scores of the main rater.

The Case Vignettes About Planning Language Support

To ascertain teacher capabilities for planning activities to support language learning, vignettes about planning language support (Mischo et al. 2011) were used. Vignettes describe hypothetical, but practical situations and are used as a stimulus to ask the involved teachers what they would do in this situation, and to explain their answer (Schnurr 2003). After the CLASS Pre-K-observations the teachers were

asked (using the vignettes) to describe how they would act in the represented situations to support the children's language learning and to explain why.

Four vignettes (No. 5–8) were used. Each focused on different aspects of speech and language learning. The teachers were asked for example to describe and explain language modeling strategies, strategies to activate children's verbal engagement or explicit support strategies for a developmental task in language acquisition. The coding referred to a proved coding system of a research project concerned with the qualifications and characteristics of teachers (Mischo et al. 2011). The coding system involves concrete criteria and examples for the classification of the open-ended responses to three ordinal levels from zero to two.

To prove inter-rater reliability 20% of the vignettes were re-coded by a trained second coder. Inter-rater reliability is the degree of concordance among raters. The Intra-Class-Correlation ICC scores of the four vignettes was between 0.91 to 1.00. What means that two raters in most cases scored the answers of the teachers equally.

Results and Conclusions: How Good was the Interaction Quality in the Observed ECEC Centres?

Overall, the quality of Emotional Support shown by the teachers in the sample was high (Fig. 11.1). Positive Climate had the highest ratings (M[3] = 5.87; SD[4] = 0.72), followed by Teacher Sensitivity (M = 5.64; SD = 0.70) and Regard for Student Perspectives (M = 5.50; SD = 0.71). Aspects of Negative Climate (recoded scores) were hardly observed (M = 6.90, SD = 0.19). These findings show that we found in most ECEC settings a good emotional connection between teacher(s) and children and respectful interactions. Also the awareness of and responsibility to children's needs were rated highly and teachers also emphasised children's interests, motivations, and points of view.

For the domain Classroom Organization a high level of interactions in the dimensions Behavior Management (M = 5.94; SD = 0.73) and Productivity (M = 5.67; SD = 0.72) was also found. This means that in most cases Behavior Management by the teachers was good and opportunities to learn were provided for most of the time – the dimension Productivity does not capture the quality of activities, but the amount of possibilities potential for learning. In the dimension Instructional Learning Formats, which captures how interesting and stimulating interactions were for the children, the quality of interactions was rated in the high mid-range of quality (M = 4.97; SD = 0.78).

Only in the domain Instructional Support did the observed teachers show rather low mean values across all three dimensions. Concept Development (M = 1.76; SD = 0.64) and Quality of Feedback (M = 2.58; SD = 0.92) were on average rated in the

[3] M = mean.

[4] SD = standard deviation.

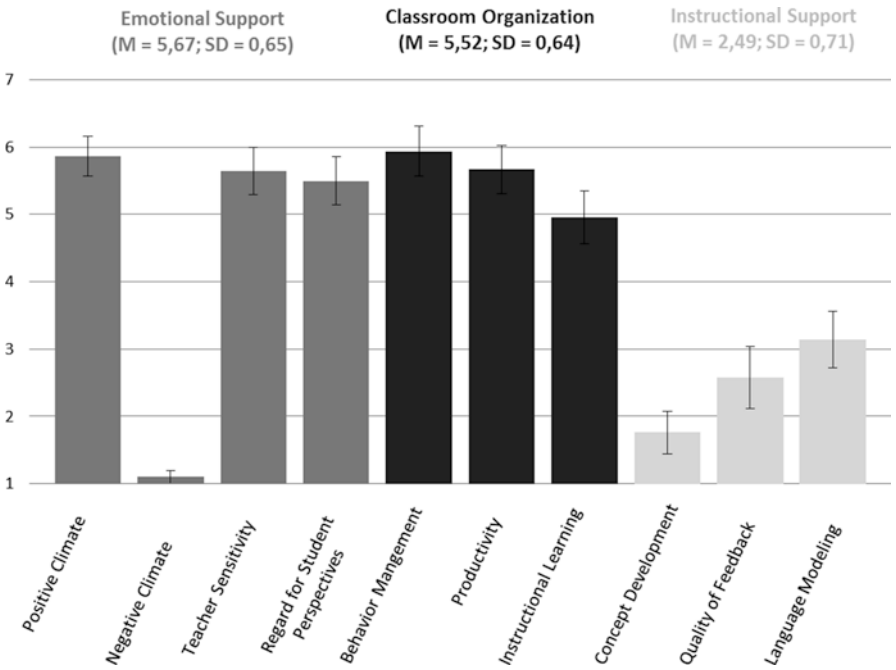

Fig. 11.1 Results CLASS Pre-K dimensions in the BIKE-study

low level of quality. These results show that the teacher rarely provided feedback that expanded learning and understanding and only very scarcely supported higher order thinking skills. Language Modeling had moderately higher scores (M = 3.14; SD = 0.85),[5] but the dimension barely reaches the mid quality level. This dimension focuses on the quality and amount of the teachers' use of language-stimulation and language-facilitation techniques as well as quantity and quality of conversations in the classroom.

The aggregated CLASS quality score across all dimensions and situations is M = 4.56 (SD = 0.58), without transition-cycles M = 4.54 (SD = 0.59). We aggregated a score without transition cycles, because transition-cycles are not comparable with homogeneous situations (e.g. circle-time, free play, mealtime). Transitions are situations with a high demand in organisational structure, but usually they are short. The Finnish CLASS Pre-K-data (Pakarinen et al. 2010) and the German data from Stuck et al. (in press) showed a good model fit (for the three-domain model including Emotional Support, Classroom Organization, Instructional Support) when Negative Climate was excluded. Negative Climate also showed very little variance in our data, so sum scores were calculated without Negative Climate, like Pakarinen et al. (2010) and Stuck et al. (in press) suggest. Negative Climate is defined by

[5] Language Modeling without transition cycles: M = 3.12 (SD = 0.89).

expressed negativity, like yelling, threats, bullying or even physical violations. In European ECEC settings, indicators of a negative climate cannot be observed very often. This is good on the one hand, but might be also a cultural effect, caused by higher controlled behavior of the European teachers in context of observation. In any case the dimension of Negative Climate does not differentiate very well in most European studies, but is very useful to give feedback to teachers who show Negative Climate at all. So in our opinion, it is important to code this dimension nevertheless, but we don't use it for statistical analyses.

Implications of the BIKE Results for Practice Transfer and Professionalisation

The reported results indicate that the observed classroom quality in German ECEC centers shows a high quality level in the domain Emotional Support and a relatively high level in Classroom Organization. In contrast, children experienced rather low quality of Instructional Support, reflecting a low quality level of Concept Development and Quality of Feedback and a low to mid-level of Language Modeling. These finding reflect results of other German studies (Kammermeyer et al. 2013; von Suchodoletz et al. 2014) using the CLASS Pre-K in different parts of Germany, and also international research, which shows similar low-level or low mid-level Instructional Support (e.g. Hamre et al. 2013; Cadima et al. 2010). Only Finnish findings stand out by showing a mid-level of Instructional Support. This might be an effect of attitudes towards education in the Finnish ECEC context. Finnish teachers might see their role more as learning companion than German teachers do, because of the tradition in German ECEC settings to focus more on care than on education. In addition "at least one third of staff employed in [Finnish] early childhood centres must be university trained kindergarten teachers" (Oberhuemer et al. 2010, p. 140) and multi-professional teams work in each centre (Oberhuemer et al. 2010). This higher qualification level might be another explanatory factor for the better learning support findings.

Interaction quality in German child education and care centers measured with instruments other than the CLASS confirm the finding that learning support strategies are not well established in German ECEC settings (e.g. Anders et al. 2012; Mackowiak et al. 2014). So it is not only the CLASS-view of interaction quality, which shows this lack of instructional support.

But it is also important to see that the results are average values and that there are also individual teachers who are competent in Instructional Support and that in some situations the teachers do show better interaction quality than in others. We report elsewhere that free play and mealtimes especially, have lower means than moderated situations (Wildgruber et al. in press). In a moderated situation the teacher is involved in a structured activity, like planned handicraft activities, painting, or experimentation. And even among the children of one group there might be differences in the individual experience of interaction quality, e.g. the known systematic differences in interaction quality experienced by boys and girls (e.g. von Suchodoletz et al. 2015).

Implementation in Practical Action

The results of the BIKE-study show a high need of professional development in the area of learning support. But what strategies are effective in supporting children's cognitive and linguistic development and how can they be implemented?

The first question is answered by existing research (see also the first paragraphs in this chapter): open-ended questions, language modeling strategies (such as repetition and extension or self- and parallel talk), and strategies to encourage higher order thinking (such as sustained shared thinking, brainstorming or planning).

These strategies are not often seen in daily routines in German preschools, therefore in-service training is necessary to implement these effective interactions.

The following examples show how these interactions might be implemented. All these strategies are also indicators for good Instructional Quality of the CLASS Pre-K (Pianta et al. 2008).

Language Support Strategies

Open-ended questions are questions that invite elaborate responses and not only one-word-answers.

How do you know? Why do you think so? What do you think the girl might do next?

Using open-ended questions or other techniques to engage children in longer conversations are very effective, however children at the beginning of their language acquisition might have problems with longer answers. For these children yes-no questions are sometimes helpful to motivate verbal participation. All strategies of support have to be adapted to the current abilities of the individual child.

Repetitions and extensions are reactions to children's utterances that acknowledge the communicative attempt and in addition give a feedback how to use language in a correct way without the demotivating effect of negative feedback (such as "That's wrong, try again!").

> *"Child: "Look - temperature thing!" Teacher: "Yes, it's a temperature thing. It's a thermometer!"*
> *Child: "That her dog!" Teacher: "That's her dog! That's Sally's dog!"* (Pianta et al. 2008, p. 80)

The examples show the teacher repeating the child's utterance in a corrected form (repetition) and giving more information (extension) on grammar, vocabulary or the topic.

Self and parallel talk means to map actions through language and descriptions

> *A child is drawing a car and the teacher says: "Oh nice, you're drawing a red car."*
> *The teacher is laying the table and says: "I'll need a fork and a knife…"*

Using **advanced language** is also important to help children to expand their (linguistic) knowledge. A teacher for example uses a variety of words (e.g. not only dog, but also sheepdog or collie) and if there is a potential new word for the children he or she explains it or connects the new word to known vocabulary.

"Child: "Red, orange, blue, yellow." Teacher: "You have many different colors in your picture. It's a multicolored picture!" (Pianta et al. 2008, p. 80)

Teacher: "This is a bottle message. A bottle message is a letter that someone put in a bottle and threw in the sea."

A point of debate is whether teachers should better use simple language to help children with understanding. On the one hand this argument has merit, because bilingual children or children with problems in language acquisition might profit from simple speech. On the other hand children also need the knowledge of elaborated speech to understand books or to erudite language used in school. Hence both are necessary: adapting language to children's linguistic knowledge and giving them adequate opportunities to learn something new.

Cognitive Support Strategies

Most of the support strategies for language learning are also effective in facilitating cognitive development in children. For example open-ended questions can be used to encourage children not only to verbally engage, but also to use higher order thinking. The following strategies help children to engage in higher order thinking processes:

Prediction: "What do you think: which of the cars will go faster?"
Problem solving: "How could they resolve their dispute? What do you think?"
Brainstorming: "What else we can find in the woods?"
Comparison and classification: "What are similarities and differences of these two flowers?"

The difference of these strategies to normal interactions is that children not only receive input, but have to think by themselves. This is much more effective for learning than mere knowledge reception. But it is not only the technique used, it is also important to encourage students' involvement and persistence in learning activities. This is supported by positive feedback and scaffolding if the child needs help.

Overall it is important to be aware of what the child is interested in and then not only to give short answers or the solution for a problem. Moreover, it is valuable for language and cognitive development to engage a child in longer back-and-forth exchanges and give hints on to help the child solve the problem him−/herself. These interaction strategies to encourage children's thinking and to scaffold higher order thinking processes in extended dialogic communication is also known as "sustained shared thinking" (Siraj-Blatchford et al. 2002).

Results and Conclusions: How about Competences in Planning Language Support?

The descriptive results in planning competences were as following (Table 11.2):

Table 11.2 Overview results vignettes

Vignette	Level 0	Level 1	Level 2
Vignette 5 ($N = 85$)	4.7%	12.9%	82.4%
Vignette 6 ($N = 81$)	11.1%	61.7%	27.2%
Vignette 7 ($N = 83$)	13.3%	44.6%	42.2%
Vignette 8 ($N = 83$)	28.9%	44.6%	26.5%

Box 11.1 Vignette 5

Vignette 5: The 4 year old Patrick sits next to you at snack-time. He says: "Mama has cut**ted** the bread that small for me."

How would you respond to the utterance of the child to support his language in this situation? Please give reasons for your answer.

Box 11.2 Vignette 8

Vignette 8: Mehmet is 6 years old. His mother tongue is Turkish. He began to learn German when he came to kindergarten. Mehmet will start school soon. He has problems with the usage of articles, for example: "die Mann" (feminine article "die" rather than the required masculine article "der").

How would you support language acquisition of this child so he will learn German articles? Please describe 3 concrete possibilities to support the correct use of articles. Please explain why you think these support strategies are appropriate.

The frequency distribution of the vignette-scores shows differences between the vignettes. Vignette 5 (see Box 11.1) was most often coded on the highest level (82.4%), in contrast vignette 8 was coded most often on the lowest level (28.9%). Therefore Vignette 8 (see Box 11.2) differentiates best on the low end of the scale.

Are Planning Competences and Quality of Interactions Related?

We were interested in exploring whether there was a correlation between teachers' ability to plan language support (as tested in the vignettes) and the quality of interactions (assessed with the CLASS Pre-K), because we hypothesized that these planning competences have an influence on the performance in daily practices.

To test the hypothesis that good planning is related to higher quality in interactions, the Spearman's rank correlation coefficient was calculated. To do this, the aggregated score of the CLASS and the vignettes as well as correlations with the single vignettes were used. No significant correlation was found between the CLASS score and the aggregated score of the vignettes ($r_s = 0.14$, n.s.). However, the separate analyses with vignette 8 yielded a significant, according to Cohen (1988) medium sized, correlation ($r_s = 0.32$, $p \leq 0.004$), whereas the other vignettes were not related significantly to interactional quality.

In addition, correlations between the dimension of Language Modeling within the CLASS and the aggregated and single score of the vignettes were analyzed. We did this to prove if there were relations between the whole set or individual vignettes with the overall interaction quality or with the competences in Language Modeling which has probably the strongest connection with planning language support. Again no significant correlation was found with the aggregated vignette-score ($r_s = 0.20$, n.s.), but vignette 8 again showed a significant, small to medium sized correlation with the interaction quality in the dimension Language Modeling ($r_s = 0.28$, $p \leq 0.01$) as with the overall CLASS score.

Furthermore, we tested how Language Modeling and competences in planning language support are related in specific situations that support the acquisition of language competencies. Therefore, book reading cycles (n = 33 teachers) were analyzed separately, following the hypothesis that it might be easier for the teachers to apply abilities in planning language support in situations focusing on language learning.

For the book reading situations a significant, medium sized correlation with the aggregated vignette-score ($r_s = 0.45$, $p \leq 0.01$) was found, but again this result had to be attributed mainly to vignette 8 ($r_s = 0.46$, $p \leq .01$), which was the only significant correlation among those with the single vignettes (cf. also Plese 2015). All correlations were analysed by using only the CLASS-cycles without transitions.

What do the Results Regarding "Competences in Planning" (Vignettes) Tell Us?

Significant correlations between abilities in planning language support activities and quality of interaction were found mainly with one of the case vignettes (vignette 8). This vignette correlated with the aggregated CLASS score as well as with the dimension Language Modeling in all observed situations.

In addition the results indicate how Language Modeling and abilities in planning language support are related in specific language support situations. The correlations in these book-reading activities were higher than for other situations. The findings support the hypothesis that planning language support for the teachers is easier in situations with focus on language learning. A possible reason why vignette 8 shows correlations to quality of interaction while the other vignettes don't might be a characteristic of vignette 8 (see Box 11.2 above).

In contrast to the other vignettes the teacher has to include knowledge of the child's specific problems in her or his support planning ("Mehmet has problems with the usage of articles, so he needs a support activity with focus on articles"). A higher score is given only if the teacher writes down that an activity with articles is planned. To get a higher score for the other vignettes it is sufficient to list support strategies without specific focus on specific linguistic domains (e.g. vignette 7: Looking for a picture with a 6-year-old boy. "What question would you use to activate children's language learning and thinking?", see also vignette 5 (Box 11.1 above).

Teachers that are able to integrate the information about the specific linguistic problem of the child in their plans for language support show better performance in

interactions, especially in situations that are focused on language learning (in this case: book-reading).

Apprenticeship and in-service training should therefore not only teach what strategies support learning, but also focus matching of knowledge with children's needs. Jamil et al. (2015) were able to show that better abilities in observing children's developmental processes also lead to better quality of interactional processes. In addition teachers in Germany often observe children's development, but do not draw conclusions regarding their pedagogy from these observation data. So it is important to train transferring knowledge on child development into specific planning and implementation of supportive activities.

Limitations and Implications for Research

The BIKE-study only included ECEC centers from cities in the south of Germany. The sample is randomised, but not representative for Germany and the generalisation of results might be limited. The results for the vignettes about planning language support have to be seen under the limitation that they are not replicated yet. This is done actually in an ongoing research project of one of the authors.

Further research is needed on how to implement interactions that support learning in German ECEC centers. Research should focus not only on the question of what kind of interactions support childrens' learning, but also on how teachers' knowledge is connected with the implementation in daily routines.

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