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# Leading inquiry-based learning with groups of children: A part of kindergarten teachers' pedagogical practices in ECEC

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## ABSTRACT

Orchestrating inquiry-based learning (IBL) with children and teaching assistants in ECECs requires teacher leadership. This chapter connects leadership with inquiry, addressing the research question: How can kindergarten teachers' leadership practices with children, during IBL processes, be understood in light of a theoretical IBL framework? Most Norwegian kindergarten teachers work closely with children as teacher leaders, holding the formal position of *pedagogical leaders*. Within this context, pedagogical leadership concerns leading groups of children and co-workers towards children's formative development through play, care and learning. Drawing upon practice-based and collective approaches to leadership, qualitative data from naturally occurring interaction between a group of two-year-old children, their teacher and teacher assistant have been generated through a micro-ethnographic study. Video data formed the basis for textual transcripts, and the development of what the researcher have named cartoon transcripts, which make sociomaterial practices visible.

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An abductive approach, moving back and forth between the empirical and theoretical dimensions of the study, has been fruitful, resulting in the author's creation of a *circuit model of inquiry-based leadership practices in teaching*. The kindergarten teachers embodied leadership practices can be understood as part of a flexible cycle of leading and co-leading up to six inquiry phases.

**Keywords:** Inquiry-based learning, teacher leadership, leadership-as-practice, kindergarten teacher, early childhood education and care

### INTRODUCING THE KINDERGARTEN TEACHER AS LEADER

This chapter explores kindergarten teachers' leadership of inquiry-based learning (IBL) in kindergartens, and their *leadership practices* during IBL processes with groups of children. Researching this phenomenon, I draw upon collective (Fairhurst et al., 2020; Follett, 1924) and practice-based (Crevani & Endrissat, 2016; Crevani et al., 2010) understandings and approaches to leadership, such as leadership-as-practice (Raelin, 2016). Leadership is viewed as practices producing direction for processes, as co-created, as both formal and informal, and as emerging collaboratively during activities. The kindergarten is a large and important social institution within Early Childhood Education and Care (ECEC) in many countries, with a great number of young children as its primary users and main stakeholders. In order to provide children with high quality ECEC pedagogy, the kindergarten teacher professions' *pedagogical leadership* is of great importance, both when it comes to leading staff and leading groups of children (Alvestad et al., 2019; Hujala, 2013). However, pedagogical leadership is a multifaceted concept with several definitions within ECEC pedagogy (Fonsén, 2013), its connections to children's learning and what it can entail in practice is by some viewed as unclear (Mordal, 2014). Within Norwegian ECEC, most kindergarten teachers are formal teacher leaders (Bøe & Hognestad, 2017; Heikka et al., 2018), leading from the middle (Grootenboer et al., 2017) and holding the title *pedagogical leader*<sup>21</sup>. They are closely and directly involved in the kindergarten's core pedagogical tasks, leading groups of children and co-workers towards children's formative development through play, care and

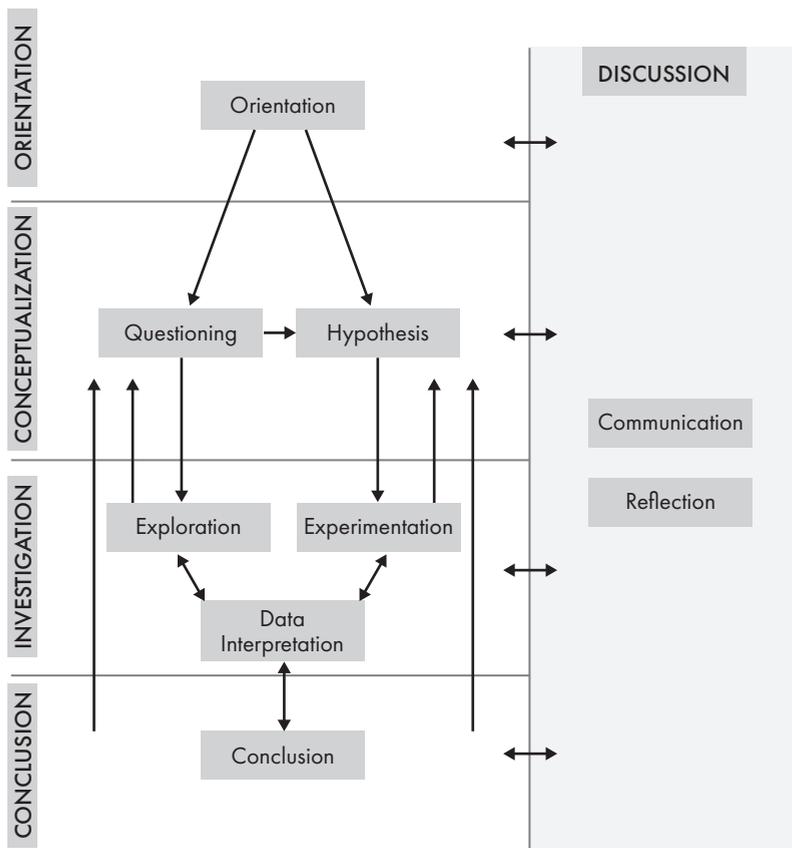
21 In this chapter, I will alternate between referring to them as kindergarten teachers and pedagogical leaders.

learning (Norwegian Directorate for Education and Training, 2017). The national guidelines for kindergarten teacher education (Universitets- og høyskolerådet, 2018) states that the kindergarten teacher education is a leadership education, and conceptualizes pedagogical leadership into the four main focus areas of 1) self-leadership, 2) the leadership of children, 3) the leadership of co-workers, and 4) the leadership of the kindergarten as an organization. The educational institutions that offer kindergarten teacher education are required to prioritize developing the students' ability to *lead children* for the entire duration and progression of the bachelor studies. However, research that addresses this specific area of pedagogical leadership is difficult to come by both nationally and internationally. I find this strange since the Greek roots of the word pedagogy mean "to lead a child" or "child leader", showing that it is intrinsically directive and entails leadership (Macedo, 2000, p. 25). The main goal of the research presented in this chapter is to shed more light upon precisely *the leadership of (or with) children*, and *leadership for inquiry-based learning* as important areas of pedagogical leadership within ECEC. Consequently, the following research question is addressed: How can kindergarten teachers' leadership practices with children, during inquiry-based learning (IBL) processes, be understood in light of a theoretical IBL framework? This was explored through an abductive analysis of video data from a micro-ethnographic study of kindergarten teachers' pedagogical practices accomplished during an inquiry-based activity with a group of two-year-old children.

## LITERATURE BACKGROUND

Much like Gert Biesta (2017) does in his book *The Rediscovery of Teaching*, my pedagogical research takes a turn towards teachers and teaching, more specifically *kindergarten teachers* and the *pedagogical leadership practices* in their inquiry-based pedagogies. The phenomena of IBL is conceptualized in different ways (Pedaste et al., 2015; Smegen & Ben-Horin, 2021). What many approaches to IBL have in common is a pedagogical and learner-centred perspective, based on constructivist theory (Chu et al., 2017). Children and student's own questions and curiosity are ideally the driving forces behind IBL. Empirical studies show that young children's thinking and learning are remarkably similar to that of professional scientists and to the process of scientific induction (Gopnik, 2012). Children are naturally curious, inquiring and exploring the world around them and in doing so construct knowledge. Hollingsworth and Vandermaas-Peeler

(2017) studied kindergarten teachers' inquiry-based teaching practices and found that the most common topics in their IBL with young children were related to the natural world. The educational practices of IBL are often described and organized in terms of different inquiry activities and phases that together form an inquiry cycle (Hollingsworth & Vandermaas-Peeler, 2017; Pedaste et al., 2015). Different variations of such inquiry cycles can be found throughout the IBL literature. To help illuminate and understand kindergarten teachers' IBL leadership, I have chosen a cycle created by Margus Pedaste, Mario Mäeots, Leo A. Siiman et al. (2015). These researchers wanted to create a comprehensive inquiry cycle aligned with the most recurrent understandings of IBL. To do so they identified and synthesized core features of inquiry-based teaching and learning from research literature about existing IBL frameworks. Their systematic literature review resulted in the identification of the five distinct inquiry phases: 1) *Orientation*, 2) *Conceptualization*, 3) *Investigation*, 4) *Conclusion*, and the 5) *Discussion phase*, which may occur in between the other phases, since it might be needed at any time in the inquiry cycle. Some of these five phases also have sub-phases as shown in figure 11.1. The arrows shown in the figure point to different possible pathways through the IBL framework, which gives flexibility to the teachers and the learners. It is important to note that Pedaste et al. (2015) are careful to add a disclaimer that inquiry-based teaching and learning is not necessarily a linear, ordered sequence of prescribed stages or phases. The order and connections between the phases may vary depending on different contexts. For instance, they may vary based upon whether the inquiry takes an inductive or deductive approach, or both. All forms of scientific reasoning can coexist in an inquiry cycle (Pedaste et al., 2015).



**Figure 11.1** Pedaste, Mäeots, Siiman et al.'s (2015, p. 56) inquiry-based learning framework.

Seeking to understand kindergarten teachers' leadership practices with children during IBL processes, the model and theoretical framework illustrated in figure 11.1 have been chosen to help analyse and explain the phenomenon.

With this in mind, what might leadership of inquiry-based learning in ECEC entail in practice? Leading IBL will involve designing, guiding, facilitating, encouraging and implementing steps of inquiry phases or a whole cycle of the phases with the children (Hollingsworth & Vandermaas-Peeler, 2017). The kindergarten teacher's pedagogical leadership and teaching will matter in this regard – this can be planned or improvised. Teaching can be understood as an art (Biesta, 2013), and kindergarten teachers can as such be seen as artists, as a creative and skilled craftspeople who must exercise a high degree of professional judgement and discretion (Norwegian Directorate for Education and Training, 2017; Gotvassli & Moe, 2020). These abilities are needed during IBL, since it requires skills in problem

solving and in fostering and inspiring children's curiosity and creativity (Chu et al., 2017). In a study by Magritt Lundestad (2012) pedagogical leaders highlighted the importance of leading and carrying out pedagogical work with children. However, they also had challenges finding the time to concentrate on such core pedagogical activities, due to constant interruptions, large groups of children, and a great number of administrative leadership tasks. I interpret these research findings to indicate that the administrative leadership tasks and the *leadership of co-workers* in some cases might become barriers for the kindergarten teacher's core pedagogical work and the *leadership of children*. During the IBL processes with children, pedagogical leaders will in most cases work closely with their team of co-workers, where leading both the staff and the children's knowledge development will be part of the inquiry-based learning (IBL) phases and processes shown in figure 11.1.

## METHODOLOGY

In order to explore the leadership practices of kindergarten teachers during IBL processes with groups of children, qualitative data from naturally occurring everyday interaction between a group of two-year-old children, their teacher and teacher assistant have been generated through a visual (Pink, 2006) micro-ethnographic study (Alvehus & Crevani, 2018; Erickson, 1971). Video recordings have been the main method for generating data throughout the research process, and all the stages from recording to selection of video clips, and the construction of different forms of transcription, are all part of the analysis. A handheld camera was operated by me as a researcher, in addition to a wireless microphone and a GoPro camera mounted on the kindergarten teacher's chest. This resulted in approximately five hours of video recordings from each of the cameras, a total of about 10 hours of video data.

An abductive approach (Alvesson & Sköldberg, 2017) was conducted during the analysis of this empirical data, moving back and forth between the different empirical and theoretical dimensions of the study. Through an open exploration of the data corpus, drawing upon collective and practice-based theories of leadership, *inquiry leadership* was identified as a type of leadership praxis. After this stage, following rigorous and repeated watching of the many hours of videos, the amount of relevant video data was narrowed down to the inquiry-based learning situations containing the kindergarten teachers inquiry-based leadership. To investigate this kind of pedagogical leadership further, the research question "How can kindergarten teachers' pedagogical leadership practices with children during

inquiry-based learning (IBL) processes be understood in light of a theoretical IBL framework?” was developed. After a literature study of IBL, Pedaste et al.’s (2015) inquiry-based learning framework was considered to be of high quality and chosen for the purpose of further analysis. After this stage, more thorough viewings and so called *hypothesis coding* (Saldaña, 2013) of the video recordings followed. The codes used were predetermined by me and developed from the five inquiry phases of the theoretical framework. A short video clip of one activity containing all of Pedaste et al.’s (2015) inquiry phases and forming an entire inquiry cycle, was chosen and cut into smaller excerpts and transcribed. The chosen inquiry cycle lasts for four minutes, starting with an orientation phase and ending with a conclusion phase. It is important for me to point out that this is not to be generalized into meaning *all* inquiry-based learning in ECEC *always* contain all of Pedaste et al.’s phases – it does not have to. There is also other data where the children co-lead more than shown in this chapter. Furthermore, since the deductive approach of the hypothesis coding was in danger of rendering important information in the data invisible, I also conducted a more inductive coding, looking for other possible forms of inquiry phases than the IBL framework’s five.

Transcribing nonverbal behaviour and other visuals in video recordings is known among researchers to be quite difficult (Heath et al., 2010). For a fine-grained analysis of the chosen video excerpts, a hybridization of comic strips with transcripts (Laurier, 2014) was generated to provide a visualization of the embodied, sociomaterial, and spatial actions of the different participants. An aim of my research methodology has been to ethically transcribe and analyse the presence and complex expressions of the very young children. Gail Jefferson’s (2004) transcript conventions combined with drawings (Albert et al., 2019) form the basis for *Cartoon transcripts* (Telnes, 2021). These visual transcripts provide “thick” descriptions of the material arrangements, context and multimodal communication (Geertz, 1993). As part of the analysis, making the cartoons has provided me with aesthetic understandings of what is going on in the video excerpts. Additionally the cartoon transcripts are meant to offer some transparency by giving detailed insights into the fieldwork, and making the empirical material “come alive”. The drawings were created by using tracing paper and markers laid over the computer screen with the meticulously chosen screenshots from the video excerpts. The drawings were then scanned and put together to form comics (Laurier, 2014, 2019) or more precisely *cartoon transcripts*. The speech bubbles contain symbols Jefferson (2004) uses in

her transcription conventions, like the pound (£) representing a smiley voice, and the degree signs (°) bracketing an utterance indicating soft or quiet sounds.

The participants of the chosen sample of inquiry-based activity are a group of six two-year-old kindergarteners, their kindergarten teacher and teacher assistant. They were having a larger inquiry process on the topic of spiders that they were exploring over a length of time. For the purpose of anonymization, they have all been given pseudonyms and their facial lines have been simplified and abstracted in my drawings of them. The kindergarten teacher, holding the formal position of *pedagogical leader*, has been given the pseudonym Ruth. An information sheet and a consent form were provided and signed by all research participants, and ethical considerations have been made continuously throughout the research process.

## FINDINGS

One day this autumn, I noticed a group of children discovering some spiders drawn on a bench outdoors. Several other children became interested in the same thing, so we decided to go hunting for spiders. Suddenly I had ten to fifteen one and two-year-olds tailing after me, all of whom showed a huge interest in spiders and all things spider related. That is why I wanted to continue our spider exploration a bit.

With this quote from the kindergarten teacher Ruth as a backdrop into her and the children's interest in examining spiders, I will now show excerpts and findings from my analysis of her pedagogical leadership during inquiry-based learning with the children during an inquiry enactment. The presentation of the research findings is built around Pedaste et al.'s (2015) IBL framework and its five distinct inquiry phases: 1) *Orientation*, 2) *Conceptualization*, 3) *Investigation*, 4) *Conclusion*, and the 5) *Discussion phase*. Results are presented in this order, illuminating how the kindergarten teachers leadership practices during IBL can be understood in light of Pedaste et al.'s (2015) theoretical framework, beginning with the headline *Leading Orientation phases*. Afterwards, a contribution to the existing IBL framework is introduced and expanded with a sixth inquiry phase and the presentation of a model developed from my findings.

### Leading Orientation phases

According to Pedaste et al. (2015, p. 54) the phases of orientation is largely about introducing a topic, and is defined by them as "the process of stimulating curiosity about a topic and addressing a learning challenge through a problem

statement” or “stimulating interest and curiosity in relation to the problem at hand”. Pedaste et al. emphasize that the environment can introduce the learning topic, it can be given by the teacher or be defined by the learners during the orientation phase. This means that the phase can be co-led by the children and the environment. In the following transcription of a one-minute video recording from a chest-mounted GoPro, I will show how Ruth begins to lead the phase of orientation with her group of two-year-old children. Through the textual transcript, we follow the kindergarten teacher as she moves through the open-plan learning environment of her large kindergarten department.

*Ruth, moving through the department wearing a GoPro camera, says, “Come and see”. A two-year-old child, beyond the camera frame, responds in a happy voice “Shall we see!” As Ruth walks, she answers “Yes, come and see!”. They pass two-year-old Ingrid who, smiling, is looking up at Ruth. “Ingrid, are you going to come and look at the spider?” Ruth asks. She moves towards a child-sized table which is flooded with light from six windows. “Look here, can you come here?” Ruth says in a soft voice to her group of children, pointing to the table, and they are almost there. She reaches for a chair. “Here” she repeats, and moves the chair slightly towards Ingrid, and says excitedly “Yes. Come and sit down”. She moves quickly to the other side of the table, repeats softly “Come and sit here” and touches two chairs. “We shall see if we find something” she says quietly with enthusiasm in her voice, moving the chairs closer to the table. The two-year-olds Oscar, Jenny and Howard are now all by the table. Ruth straightens a chair so that it is ready for Oscar who comes towards it. Christian has also joined them. Simultaneously another kindergarten teacher enters the room from the outdoors wearing a winter coverall. “Ruth?” she asks. The GoPro lens is suddenly turned away from the children, towards the co-worker. “Ruth? Have you thought about what’s going to happen when I have to leave at ten o’clock?” the colleague asks. Oscar sits down in a chair. “Yes,” Ruth answers. “Have you considered-?” she asks again pointing to the neighbouring department, the rest of her sentence inaudible as a child shouts, “It’s mine! It’s mine!” referring to a chair. Ruth points in the same direction and answers, “At that time one of their staff will come outside and help you, that is what they promised yesterday”. “It’s mine!” the child shouts again. “Yes, but I’m not sure if they have enough of their regular staff today” the other teacher answers. “I don’t know about that,” Ruth says, “If they don’t, then you’ll have to swap one of our regular staff for one of their substitutes between ten o’clock and half past ten,” she concludes. Ruth turns her attention back towards the children, and she and her teacher assistant Melissa*

*calmly help them all to find a seat at the table. “Now, Ruth is going to show you,” Ruth says, and moves towards some wall hung shelves. In a low-pitched voice, she says, “Now you will get to see what we have got here! Do you remember that we had—” while she grabs a glass jar with her right hand, and three magnifying glasses with her left hand. “Do you remember that we found a spider in the hallway?” she asks in a happy voice. Melissa, Ingrid, Oscar, Jenny and Howard all look at her, nod, and smile. “Do you remember?” Ruth asks happily.*

All of this, and much more, happened just within the first minute of Ruth’s initiation and leadership of the *Orientation phase* of this inquiry-based activity concerning the topic of spiders. Here we also get to see an example of the type of interruptions to the teacher’s activity with children, as mentioned by Lundestad (2012). For a brief moment during this minute, Ruth has to handle staffing issues, and *administrative leadership* gets in the way of her core pedagogical activity and pedagogical leadership with the primary users of the kindergarten: the children. She quickly dealt with the matter, and gets back to what she was doing. In this transcribed excerpt of the orientation phase, the participants state no theory-based questions or hypotheses for the IBL process explicitly, but gradually it is stated indirectly. The teacher leads by using her voice and her body to gather the children, moving their placement in space, getting their attention, stimulating their interest and curiosity: “Come and see,” “Yes, come and see!” and “We shall see if we find something,” she tells them, creating wonder and excitement. The learning topic is introduced by Ruth first by her asking “Ingrid, are you going to come and look at the spider?”. As quoted initially, Ruth explained that this is a topic originally introduced by the environment and the children earlier that autumn. Ruth chooses to reintroduce the topic, and to resume their exploration of spiders. She says, “Now you will get to see what we have got here!” Then she gets the jar and the magnifying glasses, and the topic is introduced once again for all the six children: “Do you remember that we found a spider in the hallway?” The teacher is engaging the children, making them ready to look at and study the spider in the glass jar. By stating that they will “look at the spider”, and “get to see”, I interpret the problem at hand to most likely be “What do spiders look like?”

### **Leading Conceptualization phases**

The IBL phases of conceptualization is by Pedaste et al. (2015, p. 54) defined as “the process of stating theory-based questions and/or hypotheses” or “the process

of understanding a concept or concepts belonging to the stated problem". This phase further consists of the sub-phases of either A) *questioning* or B) *generating hypotheses*. The first being the process of creating research questions based on the problem statement from the previous orientation phase. The second being the process of generating hypotheses concerning the stated problem. The cartoon transcript in figure 11.2 on the next page is an example of Ruth leading a *Conceptualization phase*, and follows shortly after the event described in the textual transcript about the kindergarten teacher's leadership of the *Orientation phase*. These two phases are here seen to partially overlap. In figure 11.2. we see the material and spatial arrangement with furniture, artefacts, the group of learners and their silent embodied actions. Ruth is back at the table with a spider jar and three magnifying glasses. We can see the children's gazes and their attention towards Ruth, and the object in her hands. Ruth continues to reminisce over how they found the spider, which can be seen as a way to conceptualize the spider in a way that suits this age group. She leads the children's thoughts back to when they found this spider. Her inquiry-based pedagogies and leadership practices being adapted to the age group in question, the phase of conceptualization and sub-phase of questioning found in this excerpt is, like in the orientation phase, more implicitly and *indirectly conceptualizing* than the process described by Pedaste et al. (2015). In addition to leading the children's thoughts back in time, the teacher also leads children to take turns looking at the spider through the magnifying glass. She frequently uses a smiley voice (£) (Hepburn & Bolden, 2013), also called *auditory smiles* (Drahota et al., 2008), and added emphasis and volume on some words or phrases. My interpretation of the happenings in this event is that the kindergarten teacher is working with the children on the process of understanding the concept of spiders, initiating the researching and inquiring into what spiders might look like by using magnifying glasses as research equipment. Although not stated explicitly by any of the participants, what happens in figure 11.2 can be understood as a conceptualization phase, where the implicit questions at hand for their spider investigation is "what do spiders look like?" and the more methodological question of "how do we use the magnifying glass to look at it?".

00:00:00 (GoPro) | 00:00:03

Do you all remember that we found a spider in the hallway, when we went inside?

We had gone looking for spiders outside-

00:00:08 | 00:00:10

-looking e::verywhere, and then we found-

-and when we entered the hallway then- Do you all remember that we £found a spider £then?

-no £spiders-

The kindergarten teacher Ruth begins to conceptualize the spider lying in the jar by retelling its history.

00:00:17→00:00:18 | 00:00:20

And Oscar!

Yes, wait a minute. You will also get to have a look.

Must have!

Yes, see here. You can all have a look with this.

Ruth leads and distributes time so that all the children can take turns looking at the spider. She starts their investigation by giving Howard (2.4 years old) a magnifying glass, and invites them to take a look.

**Figure 11.2** Cartoon transcript of teacher leadership practices during a conceptualization phase.

### Leading Investigation phases

The phases of investigation are defined by Pedaste et al. (2015, p. 54) as “the process of planning exploration or experimentation, collecting and analysing data based on the experimental design or exploration” or “the phase where curiosity is turned into action in order to respond to the stated research question or hypotheses”. The investigation phase consists of the three sub-phases of either A) *exploration* or B) *experimentation*, and C) *interpretation*. During this phase, the teacher and learners do observations, conduct experiments, test their potential hypotheses, create, wonder and interpret to make new meaning. The cartoon transcript in figure 11.3 on the next page is an example of Ruth leading an *Investigation phase*, and follows shortly after the event described in the cartoon transcript in figure 11.2 about her leadership of a *Conceptualization phase*. The drawings in figure 11.3 exhibit the phenomena both from the perspective of the kindergarten teacher with the GoPro camera, and me and my handheld video camera. The strip of panels show a three-second sequence, which guide our attention towards the embodied spider-exploration taking place. We can see the kindergarten teacher using her hands to hold both the spider-jar and the magnifying glass together with Howard (2.4 years old), holding her hands over his hands. With her embodied leadership practices Ruth steers the positioning of both artefacts, leading Howard’s movements, and at what angles he should hold the objects in order to be able to study the spider through the magnifying glass. Being in the sub-phase Pedaste et al. (2015) calls *exploration*, Ruth tells Howard “If you do it like *this*” with an emphasis and added volume on “*this*”. Thus giving guidance on how to use the research equipment. Together Ruth and Howard leads by example on how to investigate and explore the spider, as the five other children and the teacher assistant Melissa observe what they do.



**Figure 11.3**

Cartoon transcript of teacher leadership practices during an investigation phase.

### Leading Conclusion phases

The phase of conclusion is characterized as “the process of drawing conclusions from the data. Comparing inferences made based on data with hypotheses or research questions” (Pedaste et al., 2015, p. 54). The data in this case being the spider in the jar and some books with pictures of spiders. Here the kindergarten teacher and the children will be attempting to answer the driving question of their inquiry, and possibly try to formulate explanations. The cartoon transcript in figure 11.4 on the next page shows us some of the visual materialities of Ruth leading a *Conclusion phase*. This follows shortly after the event described in the cartoon transcript in figure 11.3 about her leadership of an *Investigation phase* and after the *Discussion phase*, which will be presented after this in figure 11.5. In this excerpt, the kindergarten teacher is holding up an open book showing pictures of spiders. We can see all six children having their faces turned towards the teacher and the book. Ruth has stated multiple times that they shall look at the spider. Until now, all the children have freely studied the spider without any guidance on what to look for. One of the activities has been looking at the spider in the jar through a magnifying glass, and now they are observing a large picture of a spider in the book. Thus, I have interpreted their original problem statement to be “what do spiders look like?”. Ruth then asks a related sub-question “What colour is this spider?”. Doing this leads the children’s attention towards observing specific aspects of the spider’s appearance. As in earlier phases she frequently use a smiley voice (£) and emphasis on single words to draw the children’s attention to the spider’s colours. When Oscar concludes that the spider is black, Ruth affirms this and asks a follow-up question, “And also it’s *a bit-?*” leaving room for the children to fill in the blank space in her sentence. She follows up this in a soft, quiet voice (°) “What colour is this then?” pointing a finger to the said colour. Then she creates a new incomplete sentence “It’s a bit-?” leaving room for an answer, and Ingrid concludes that it is orange. Thus, the kindergarten teacher has led the children through the process of coming to a conclusion that spiders can be black, but also orange. This can be seen as answering the implicit driving question of their inquiry, “what do spiders look like?”.

00:00:00

There!

Do you see what colour it has this spider?

The kindergarten teacher Ruth is holding up an open book with pictures of spiders. Ingrid (2.10 years old) is exploring what the spiders on the page looks like by using a magnifying glass. The teacher leads the group of children's attention towards observing the colour of the large spider.

00:00:01

Black!

It is black, yes.

And also it's a bit-?

00:00:05

What colour is this then\*?

((points))

Oscar (2.5 years old) concludes that the spider is black, and the kindergarten teacher confirms that it is.

00:00:10

It's a bit-

Orange, yes!

-Orange.

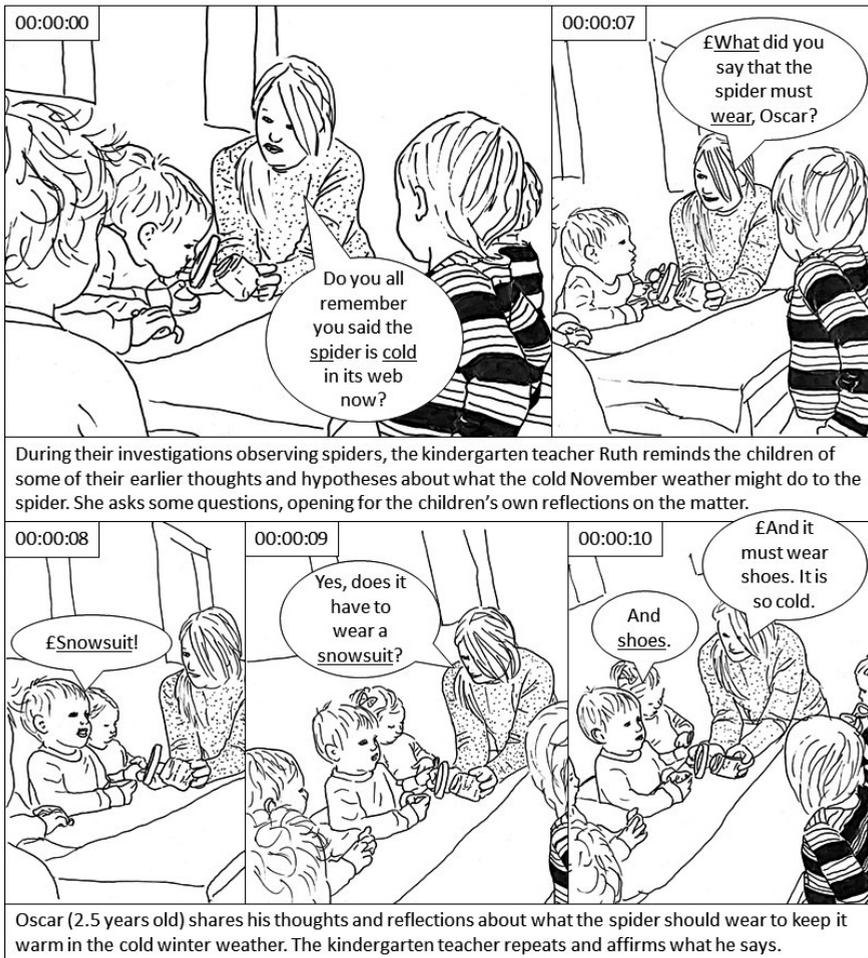
Ruth asks the children what other colour the spider has, Ingrid answers «orange». Through their observations of the spider in the book, they conclude that spiders can be black, but also a bit orange.

Figure 11.4

Cartoon transcript of teacher leadership practices during a conclusion phase.

### Leading Discussion phases

The phase of discussion is defined by Pedaste et al. (2015, p. 54) as “the process of presenting findings of particular phases or the whole inquiry cycle by communicating with others and/or controlling the whole learning process or its phases by engaging in reflective activities”. The discussion phase further consists of the two sub-phases of A) *communication* and/or B) *reflection*. Both can be seen as either external processes in the community, or internal processes happening in the learner’s mind. This involves communication and/or reflection about the outcome of a single inquiry phase, or the entire inquiry cycle. The cartoon transcript in figure 11.5 provides insight into Ruth’s leadership of a *Discussion phase*. This inquiry enactment happened in between the *Investigation phase* described in figure 11.3 and the *Conclusion phase* in figure 11.4. As mentioned initially in the presentation of Pedaste et al.’s (2015) inquiry-based learning framework and figure 11.1, the discussion phase may occur in between all the other phases, since it might be needed at any time in the inquiry cycle. Oscar (2.5 years old) is looking closely at the spider through the magnifying glass, being in an *Investigation phase*. Then the kindergarten teacher reminds the children of the hypothesis that some of them had previously formed about the spider. “Do you all remember you said the spider is cold in its web now?” “£What did you say that the spider must wear, Oscar?” she continues. He looks up at her, looking thoughtful in the cartoon transcript’s second panel, before in the third panel he exclaims in a smiley voice “£Snowsuit!”. Through her questions, Ruth has led the children’s attention towards the hypothesis and opened up for the children’s thoughts and reflections on the issue. Oscar shares his thoughts about what the spider should wear to keep it warm in the cold weather, probably drawing on his own experiences and life world. His teacher repeats and affirms what he is saying. “And shoes” he adds. “£And it must wear shoes. It is so cold” Ruth affirms. During this *discussion phase* Ruth’s leadership has consisted of leading the directions of the children’s thoughts, and to listen to, value and empower their hypotheses.



**Figure 11.5** Cartoon transcript of teacher leadership practices during a discussion phase.

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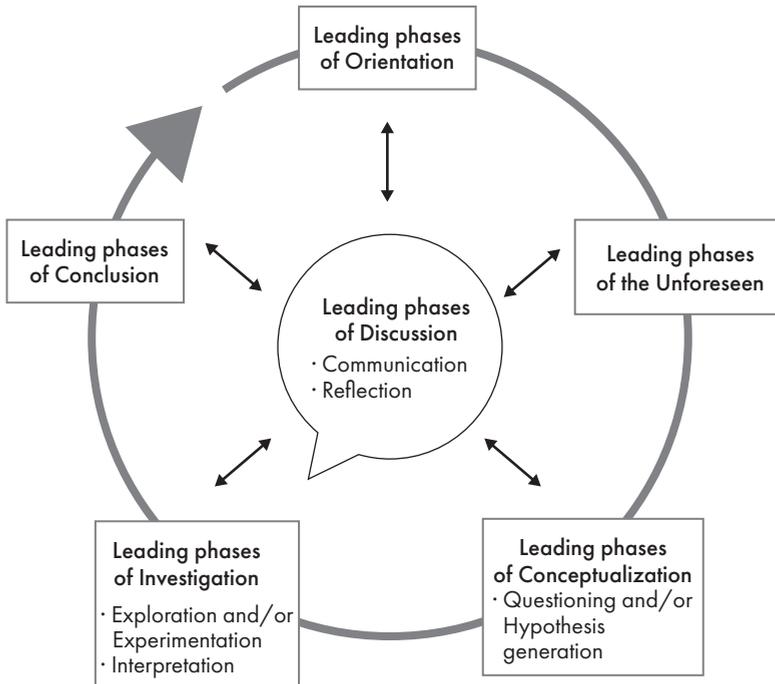
### Leading Unforeseen phases

The empirical samples and entire inquiry cycle shown throughout this chapter were chosen because I found all of Pedaste et al.'s (2015) five inquiry phases in it. Additionally, I found unforeseen happenings, like the interruption during the orientation phase, where Ruth suddenly had to handle staffing issues. Other unforeseen events during IBL processes might be initiated by children, co-workers, or by other parts of the material world. In my opinion, they can be seen as phases in their own right and must be considered. This formed the need

for a sixth optional inquiry phase, building on Pedaste et al.'s framework, which I have chosen to name *the unforeseen phase*. This phase, like the *discussion phase*, can emerge at any time during the IBL process. It is characterized by not being planned or imagined as a part of the IBL process. Although there is room for the unknown within the other five phases, this phase entails a surprise in itself. A surprise which one cannot foresee as possible happening and thus requiring improvisation, which according to Biesta (2015) is the core task of the teacher.

### **A circuit model of inquiry-based leadership practices in teaching**

Analysing the kindergarten teacher's leadership practices in light of Pedaste et al.'s (2015) theoretical framework, I have developed *The circuit model of inquiry-based leadership practices in teaching*, as shown in figure 11.6. This is meant to be a flexible model for teachers to utilize for their own IBL leadership, with room for formal leadership combined with collective leadership with children and co-workers (Contractor et al., 2012; Fairhurst et al., 2020). Like Pedaste et al.'s (2015) inquiry-based learning framework, my model of IBL leadership is flexible regarding the order of the different phases. Leading inquiry-based teaching and learning is not necessarily a linear, ordered sequence of prescribed stages or phases. The six different phases form a dynamic guide for which directions it is possible to lead an inquiry process in, and which phases one could go through to drive it forward. The phases can overlap in time, as seen in some of the transcripts in this chapter. You could argue that Ruth and the kindergarteners are in conceptualization and investigation phases during much of the inquiry cycle presented. Analysis of this video recording, and recordings of other inquiry cycles in my overall data corpus shows that neither the phases nor the entire inquiry cycle need to last long. In addition, one lengthy inquiry cycle that last over days or weeks can be made up of many short ones, like the one presented in this chapter. However, it is my hope that the circuit model in figure 11.6, combined with professional judgement and discretion, can be of some guidance and support for teachers leading IBL with groups of children.



**Figure 11.6** The circuit model of inquiry-based leadership practices in teaching.

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## DISCUSSION

Throughout the current chapter I have identified and explored some leadership practices accomplished by a kindergarten teacher during inquiry processes with groups of children, trying to understand her leadership in light of Pedaste et al.'s (2015) theory of inquiry-based learning. Leadership as a phenomenon can be understood and performed in different ways, and sometimes we lead without being aware of it. Researching this phenomenon, I draw upon approaches that view leadership as practices producing direction for processes, as co-created, as both formal and informal, and as emerging collaboratively where power might be distributed and shared (Crevani et al., 2010; Follett, 1924). With that in mind, how can Ruth's leadership practices *with* the children during their IBL processes be understood in light of Pedaste et al.'s IBL framework? First of all the leadership practices can be understood as situated, taking place and being continuously produced in the concrete inquiry context, and within and across the different phases and sub-phases in Pedaste et al.'s inquiry-based learning

framework. Second, the material presence of the spider, the children's own curiosity about spiders, combined with Ruth's curiosity-creating leadership can be viewed as the driving forces behind this IBL. Although the leadership generated within the short inquiry cycle can be seen as co-created by the spider, the children and their environment collectively, through her material presence and pedagogical praxis Ruth is emitting strong leadership behaviour. Through her embodied and professional leadership, Ruth establishes direction for the spider inquiry, gathering and aligning the children, encouraging and motivating them. In light of Pedaste et al.'s IBL framework, such inquiry-based teaching practices with a group of children seems mostly to be teacher-led throughout all inquiry phases, and to some extent co-created and co-led by the children. I suspect this is because pedagogy intrinsically involves teachers leading children as well as the children's young age and asymmetrical relationship. In many instances this may be a necessity in order to create action, direction and ensure quality for IBL processes. However, does an inquiry phase and the entire inquiry cycle have to be all teacher-led? No, it affords opportunities for children's participation and leadership, driven by their own wonders and passion to understand something during all phases. My observations of the group's other inquiry-based activities regarding spiders shows that many of them were to a large degree co-led by the children. This is important to have in mind when reading and potentially applying the model in figure 11.6. The learner's perspective is important. In the earlier quote from Ruth, she described how the inquiry into spiders began by children finding some drawings of spiders outdoors, thus the spider project became co-led by the kindergarten teacher and the group of children. Through my abductive approach, synthesizing leadership theory, IBL theory and my empirical data, I see the six inquiry phases shown in figure 11.6 as a flexible framework that can help teacher leaders set directions and drive inquiry-based learning processes in participation with children in ECEC.

## IMPLICATIONS

I have turned my attention towards *kindergarten teachers* and connected their pedagogical leadership practices with inquiry. By identifying teacher leadership during inquiry-based activities, and making them visible through cartoon transcripts, the research enables some "lost voices of leadership" (Edwards, 2015, p. 2) and discovers less illuminated sides of the kindergarten teacher profession's particularities. The significance of the study presented is new and valuable

knowledge about some of the kindergarten teacher's leadership practices *of* and *with* groups of children. Such strengthening of the profession's knowledge base can contribute to a richer, more complete and nuanced view of the leadership phenomenon's ontology, regarding what leadership in ECEC can be and entail in the physical and practical reality. The findings bring forth how the leadership of inquiry-based learning is produced, and by whom. The analysis suggests that the kindergarten teacher through her embodied leadership practices leads and co-leads different inquiry phases during IBL activities. *The unforeseen inquiry phase*, which was developed along with *the circuit model of inquiry-based leadership practices in teaching*, is a contribution that might be practically useful and may impact the ECEC community and kindergarten teachers' future IBL leadership views and practices.

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