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Exchange on subject pedagogy during lesson study in initial teacher education

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Student
teachers' talk
about subject
pedagogy

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Abstract

Purpose – This exploratory study investigates the extent to which lesson study (LS) in initial teacher education (ITE) teams address subject-pedagogical aspects during their conversations and what subject-pedagogical aspects are addressed.

Design/methodology/approach – The two-case design of the study – one LS team in ITE comprised of an ST and experienced teachers and one comprised of an ST and novice teachers – is aimed to discover similarities and variations in their focus of attention.

Findings – The conversations of both LS teams were to a large degree about subject-pedagogical aspects. Both teams paid relatively less attention to discussing the themes “subject matter” and “learning objectives” and more to “pupils’ learning and “teacher activities.” Concerning the theme of “pupils’ learning, the LS team with experienced teachers focused more than the novice LS team on discussing the aspects “pupils’ initial situation and “expected learning behavior.” The novice LS team focused more than the experienced team on discussing their observations of individual pupils’ thinking.

Originality/value – The results indicate that LS in ITE with a mix of ST and experienced teachers can facilitate exchange on subject-pedagogical aspects of the research lesson. This may help develop and deepen the subject-pedagogical knowledge, views and routines of STs. The differences found between the two LS teams provide starting points for differentiation in the support of LS teams in ITE. Follow-up research could focus on the questions of whether and how LS teams in ITE bring more coherence to their attention for subject-pedagogical aspects of the lesson.

Keywords Initial teacher education, Lesson study, Preservice teachers, Subject pedagogy

Paper type Research paper

1. Introduction

A central goal in initial teacher education (ITE) is to promote student teachers’ (STs) subject-pedagogical knowledge and skills. Teachers who are competent in supporting their pupils’ subject-specific learning have, among other things, knowledge about learning objectives; how pupils differ in understanding, interpreting and learning the subject matter; and how to teach in such a way that pupils achieve the learning objectives (Grossman *et al.*, 2005).

To stimulate the acquisition of subject-pedagogical knowledge, an ITE curriculum often includes components of subject pedagogy that ideally enable STs to better understand the practice of the school subject and to make more conscious choices about their own teaching (Verloop *et al.*, 2001). However, the transfer of subject-pedagogical knowledge to practice does not occur automatically during ITE, partly because STs themselves establish few relationships between the subject-pedagogical knowledge provided to them and their own teaching practice, and partly because the STs’ and their internship supervisors’ focus is often on STs’ classroom management skills rather than on pupils’ subject-specific learning (Berliner, 2004; Kessels, 2010).

ITEs would do well to stimulate the transfer of subject-pedagogical knowledge to STs teaching practice by having STs perform tasks that help them to apply this knowledge in



complex, real and open situations (Zwart *et al.*, 2009). Such so-called real learning tasks are based on the following design rules or theory of action (Kennedy, 2016): (1) have STs critically examine pupils' understanding and learning difficulties in learning the subject matter, (2) give STs the opportunity to apply their acquired knowledge in teaching situations at the internship school and (3) allow STs and experienced fellow teachers to frequently discuss aspects of teaching with one another (Grossman *et al.*, 2009; Verloop *et al.*, 2001; Wenger, 2000). Lesson study (LS) appears to be an effective form of such a real learning task, as it attempts to shift STs' focus from themselves to their pupils in an effort to strengthen their possibilities to learn more about the consequences of their instructional decisions for their pupils (Munthe *et al.*, 2016).

Some studies show that STs indeed discuss subject-pedagogical aspects during the LS conversations (Amador and Weiland, 2015; Lee, 2019), but to what extent the focus is on subject pedagogy rather than on classroom management and organizational aspects of LS is unknown, just as which subject-pedagogical aspects are discussed. To gain more insight into this topic, we use this explorative study to analyze the content of the preparation and evaluation conversations of two LS teams. Both teams consisted of an ST Dutch language and literature and more experienced fellow teachers at the internship school. The research questions are as follows: To what extent do the LS conversations in ITE evoke an exchange about subject pedagogy? Which subject-pedagogical aspects are discussed during LS conversations in ITE?

2. Theoretical framework

2.1 Subject pedagogy

Prospective teachers need to develop subject-pedagogical knowledge and skills that pertain specifically to teaching their school subject (Grossman *et al.*, 2005; Magnussen *et al.*, 1999; Shulman, 1986), also called pedagogical content or topic-specific professional knowledge and skills (Gess-Newsome, 2015). It involves knowledge and skills in making the subject matter accessible to learners (Gess-Newsome, 2015; Loughran *et al.*, 2004), and it concerns the subject matter, learning objectives and pupil and teacher activities in mutual coherence. Subject-pedagogical knowledge and skills are strongly situation, context and person specific and vary depending on, for example, the school subject, the pupils' educational level, the school context, the national curriculum and the teacher (Gess-Newsome, 2015).

Grossman *et al.* (2005) have formulated a set of subject-pedagogical questions that can help STs better understand the practice of the school subject. The questions represent various aspects of subject pedagogy that STs can think about during the preparation and evaluation of their teaching. The questions can be grouped into six themes: learning objectives, subject matter, pupil learning, teaching, teaching materials and assessment. The questions are not intended to be prescriptive or normative; rather, they are meant to help STs make conscious choices in their education design (Grossman *et al.*, 2009). In this context, the task of ITE is to create situations in which STs can obtain and refine their answers to the subject-pedagogical questions (Grossman *et al.*, 2005). In the next section, we discuss how LS in ITE may help direct STs' attention to these subject-pedagogical aspects of their teaching.

2.2 LS in ITE

Larssen *et al.* (2018) identify several variants of LS in ITE that differ on dimensions such as the composition of the teams and place of execution. The LS in ITE variant of this study, in which STs go through the entire cycle together with experienced teachers at their internship school, gives STs the opportunity to exchange subject-pedagogical knowledge and concepts with their more experienced teacher counterparts; for example, they can discuss the subject

matter or teaching methodology of the research lesson. STs can test their knowledge and views against those of their more experienced fellow teachers (Bae *et al.*, 2016) and the latter can help STs develop and deepen their subject-pedagogical knowledge, views and routines (Amador and Weiland, 2015; Cajkler *et al.*, 2013; Grossman *et al.*, 2009). As the LS cycle progresses, the team in principle gains more insight into the question of which interventions help pupils achieve the learning objectives and can directly link this knowledge to their own teaching practice (De Vries *et al.*, 2016). Indeed, several studies on LS in ITE report positive results with regard to the development of subject-pedagogical knowledge, insights, opinions and attitudes (Cajkler and Wood, 2016a; Carter and Amador, 2015; Larssen and Drew, 2015).

2.3 *This study*

The aim of this study is to generate knowledge about the extent to which LS teams in ITE address subject-pedagogical aspects of the research lesson and which aspects are exchanged. We consider our study explorative, because the emphasis is more on discovering ideas and insights and less on collecting large amount of data. We have chosen a two-case design – two mixed LS teams whose participating experienced teachers differ in teaching experience – with the aim to discover both similarities and differences in attention to the subject-pedagogical aspects (Swanborn, 2010). Comparing these heterogeneous cases helps us reveal variations in processes and situations (Swanborn, 2010). The themes and questions from Grossmann *et al.* (2005) form the basis for our content analysis of the conversations.

3. Method

3.1 *Context and participants*

We carried out the study in the Dutch ITE program for teaching in higher secondary education at the University of Groningen in the Netherlands. Students follow this program after obtaining their master's degree in Dutch language and culture. To fulfill a 10 ECTS research part of their 60 ECTS ITE curriculum, which also consists of 30 ECTS internship and 20 ECTS subject pedagogy, STs could choose from a range of different inquiry-based learning activities. One concerned a LS aimed at promoting perspective-taking behavior of pupils.

Perspective taking refers to the cognitive capacity to view situations from another person's point of view (Birch and Bernstein, 2007). Various functions and benefits are attributed to perspective taking, including the ability to connect emotionally with another person (Galinsky and Ku, 2004). In the school subject Dutch language and literature, learning to take perspective plays a role in literature and conversational skills education. Several learning goals from the legal frame of reference require perspective talking, such as “identify empathetically with different characters” and “postpone a response until he has interpreted and assessed the contribution of the other” (Van Beek *et al.*, 2008, pp. 22 and 42). Although perspective is considered an important educational goal in the Netherlands (Onderwijsraad, 2011), it has not yet been given a clear place in the curriculum. This prompted the first author to bring up the subject during classes on subject pedagogy and to develop example teaching material on perspective taking. After exploring the example teaching material, two STs chose LS as their research project. For the purpose of an assessment, students wrote an LS report after finishing the LS cycle.

The STs found fellow teachers of Dutch language and literature at their internship school willing to voluntarily participate in an LS team. These fellow teachers had no experience of engaging in LS and none in teaching perspective taking, making this LS unfamiliar territory for all participants. The fellow teachers taught in parallel classes in the same grade and level

of upper secondary education. Therefore, the team compositions were partly determined by the conditions at school. LS team 1 consisted of an ST and three highly experienced teachers with 10 to more than 20 years teaching experience, including the internship supervisor. LS team 2 consisted of an ST and two novice teachers with 2–3 years of teaching experience. All participating teachers taught at a rural, comprehensive school. LS team 1 conducted the LS in grade 4 of the senior general secondary education. LS team 2 in grade 4 of pre-university education.

3.2 Working method of the LS teams

Because a facilitator who leads LS conversations and monitors the LS process (Lewis, 2016) was not available, we took the following steps to support the LS process. First, we explained the goals and working methods of LS to both teams. Second, we provided a manual showing how the teams could perform the LS cycle step-by-step, in line with Dudley (2014) and de Vries *et al.* (2016). Third, the first author organized seven meetings with all STs in which they discussed experiences and tools for the next steps of the LS process. These discussions were intended to provide guidance to the STs, who were charged with leading the LS-meetings at school. Fourth, we provided the LS teams with a resource kit. This is in line with Lewis and Perry's (2014) finding that collaboratively discussing and redesigning existing teaching materials can facilitate coherent knowledge, beliefs and routines, especially in teams whose members differ in knowledge, experience and status. The resource kit consisted of a guideline for a semi-structured interview with pupils based on Dudley (2014), two sample observation forms and sample teaching material focused on the domains of literature and conversational skills. After we distributed the resource kit to LS team members, each team further developed the example lesson series to make it useful for their specific class context. The STs adjusted the teaching materials on the basis of the agreed-on changes.

The teaching material in the resource kit was intended for the fifth grade of pre-university education (pupils aged 16–17 years) and consisted of three lessons 50 min in duration. The lesson series starts with an introductory case in which a dilemma was introduced with different actors. Based on this, the lesson series core concepts of “perspective taking,” “moral dilemma” and “norms and values” are explained. Then a short literary story with accompanying assignments is presented. In the first two lessons pupils explore the different choices made by the characters in the story and what personal norms and values play a role in their own and their fellow pupils' evaluations. To promote perspective taking among peers, learning activities like dialogical learning, geared toward exchanging authentic points of view (Frijters *et al.*, 2008), and stimulating explorative talking instead of consensus-oriented talking, have been included in the teaching material. In addition, theory has been offered about which conversation acts promote perspective taking, such as paraphrasing and expanding on others' ideas. In the third lesson pupils walk in the shoes of the writer of the story by exploring the effects of writer's linguistic choices on the reader's interpretation. The main teaching activity in this lesson was modeling: the teacher demonstrates how the language the writer has used influenced the interpretation of the text.

3.3 The LS cycle

The LS cycle of both teams consisted of several rounds of teaching the research lesson. Each team performed as many rounds as team members, such that LS team 1 conducted four rounds and LS team 2 three. Each team chose one lesson from the lesson series of three to form this research lesson. LS team 1 chose the second lesson and LS team 2 the third lesson. Although each team member performed the entire lesson series in their own class, the other team members observed only the research lesson. In accordance with Cajkler and Wood (2016b), an experienced teacher conducted the first research lesson; the ST taught the

research lesson in the second round, and then an experienced teacher taught the following rounds. LS team 2 held a closing conversation at the end in which members discussed findings and outcomes across the entire cycle, whereas LS team 1 did not. [Table 1](#) presents an overview of the execution of the cycle.

3.4 Data collection

The STs audio recorded all LS conversations. LS team 1 held two preparation and two evaluation conversations whose average length was 25 min. The mean length of the two preparation meetings was 36.5 min, and of the two evaluation meetings was 12 min. LS team 2 held three preparation and four evaluation conversations with an average length of approximately 45 min, with an average length of 50,5 min of the preparation meetings and 40 min of the evaluation meetings. The differences in time spent between the teams demonstrate that the LS method is not fixed with a prescribed amount of time and meetings (the fidelity perspective; [Anderson, 2017](#)); rather, this approach can be adapted to teachers' own local practices, as long as they adhere to the core components of LS (the local adaptation perspective; [Quinn and Kim, 2017](#)).

3.5 Data analysis

The data analysis consisted of five steps. First, we transcribed all LS conversations and entered the transcripts into Atlas-ti. Second, the first author divided the conversations into fragments. A fragment begins when the LS team raises a topic and ends when discussion of the topic is closed and the team moves on to another topic. Third, the first author performed an initial global analysis, which showed that the fragments were partly subject-pedagogical and partly non-pedagogical in nature. We excluded the non-subject-pedagogical fragments that dealt with classroom management or organizational aspects related to the LS process or contained self-instructions (e.g. how to improve the PowerPoint).

The fourth and fifth steps involve encoding the fragments. We developed coding categories through open, axial and selective coding in line with [Boeije \(2009\)](#). The fourth step involved an open-coding session in which the first author, together with a fellow researcher who specialize in qualitative analysis of interviews, coded the transcripts of the first two conversations of LS team 1. Using these codes, both researchers jointly coded all subject-pedagogical fragments of LS team 1. To the extent possible, we formulated the codes in the participants' language. If the teams discussed several subject-pedagogical aspects within a fragment, we assigned several codes to that fragment. We then modified the code tree, and

LS cycle LS team 1	LS cycle LS team 2
Reception of source kit	idem
Preparation meetings: adjusting teaching materials	idem
Measurement perspective-taking behavior of pupils, selection of pupils to be observed	idem
Observing research lesson, given by teacher 2	idem
Evaluation meeting 1: adjustment of first research lesson	idem
Observing adjusted research lesson given by ST	idem
Evaluation meeting 2: adjustment of second research lesson	idem
Observing adjusted research lesson given by teacher 3	idem
	Evaluation meeting 3: adjustment of third research lesson
Observing research lesson given by teacher 4	Closing meeting

Source(s): Created by the author

Table 1.
LS cycle as performed
by the both LS teams

both researchers separately coded one of the conversations of LS team 2. Through continuous comparison and discussion of differences in interpretation, we created a code tree with 80 codes.

In the fifth step, the first author organized three separate coding sessions with three different researchers. Via axial and selective coding the 80 codes were linked to the four themes formulated by Grossman *et al.* (2005): subject matter, learning objectives, pupils' learning and teaching activities, and further categorized into 14 aspects. Grossman *et al.*'s theme teaching material was left out because the LS teams worked with the teaching material offered in the resource kit and did not consult other available teaching materials. Propositions relating to summative assessment (part of the Grossman *et al.*'s sixth theme) were also absent in the conversations because for the LS teams in this study the lessons were inserted in the curriculum without space for summative assessment. Comments concerning the formative evaluation are included in the theme of pupils' learning. See Table 2 for the final code tree, and Table A1 for examples from the conversations, related to the final code tree.

Theme	Aspect	Key questions
Subject matter	1a. Defining subject matter	What concepts are covered in the teaching material, what are their definitions? Do they match ours? With what consequences?
	1b. Defining additional subject matter	What other concepts are needed to promote perspective taking? What are their definitions?
	1c. Understanding relationship between subject matter and teaching materials	How do the concepts come back in the texts, explanations and assignments from the teaching material? What are adequate answers to the assignments?
Learning objectives	2a. Embedding in the school subject	How does learning perspective taking relate to the continuous learning pathways, other domains of the school subject, other school subjects?
	2b. Relevance	Why is learning to take perspective important for our pupils at this stage of their development?
	2c. Lesson goals	Which goals are we aiming for with the different parts of the lessons?
Pupils' learning	3a. Initial situation	What are pupils' prior knowledge and misconceptions?
	3b. Expected learning behavior	How are our (case) pupils expected to respond to the teaching materials? What will they find difficult? Which questions will they ask? Which answers will they give?
	3c. Observed learning behavior	What did pupils say and do?
Teaching activities	4a. Meaning making	How do we clarify the goals, relevance and embedding?
	4b. Walking in the shoes of the characters	What (other) content and activities are needed to stimulate pupils to walk in the shoes of the characters?
	4c. Walking in the shoes of peers	What (other) content and activities are needed to stimulate pupils to walk in the shoes of classmates?
	4d. Modeling	What content and activities are needed to help pupils understand the effect of language used on the reader's interpretation?
	4e. General educational needs	How can we meet the general educational needs of our pupils?

Table 2.
Final code tree

Source(s): Created by the author

To check the reliability of the presentation of the results, conclusions and discussion, we sent a penultimate version of the article to the participating STs. Both STs recognized themselves in the rendering, and they made only a few minor textual changes.

3.6 LS team 1

We distinguished precisely 100 fragments in the two preparation and two evaluation meetings of LS team 1. Of these fragments, 23% were non-pedagogical, meaning they dealt with organizational aspects of the research lesson, which left us with 77 fragments to analyze.

In those 77 fragments, LS team 1 addressed subject-pedagogical aspects of the research lesson 115 times. Table 3 shows how the attention to these 115 subject-pedagogical aspects is distributed over the various meetings, themes and aspects. LS team 1 discussed three-quarters of the subject-pedagogical aspects during the two longer preparatory meetings, the other quarter during the two shorter evaluation meetings.

LS team 1 paid by far the most attention, almost 85%, to the themes of pupils' learning and teaching activities, and over 15% to the themes subject matter and learning objectives. The team discussed 13 of the 14 subject-pedagogical aspects and paid no attention to supplementary subject matter. Striking is the great amount of attention in the preparation meetings to how pupils will react on the research lesson. For example LS team 1 mentioned that it would be a difficult series of lessons for the pupils: *"This is really ambitious"* and the team expects *"that it will be difficult to get the discussion started with these assignments"* (code 3b). The team believed that its pupils *"should be guided step-by-step"* through the subject matter, with variety in learning activities and many concrete examples, and decided to discuss more cases of dilemmas with the pupils (code 4e). In the evaluation meetings no attention was paid to discussing the expected reactions of pupils. The aspects "expected learning behavior of pupils," "embedding," "relevance," "modeling" and "meaning making" were also only discussed during the preparation meetings. It is also noteworthy that the

Theme	Aspect	P1	P2	E1	E2	Sub-total	Total	%
Subject matter	1a. Defining subject matter	4	3	0	0	7	10	8.7
	1b. Defining supplementary subject matter	0	0	0	0	0		
	1c. Understand relationship between subject matter and teaching materials	2	1	0	0	3		
Learning objectives	2a. Embedding	1	0	0	0	1	8	7.0
	2b. Relevance	4	0	0	0	4		
	2c. Lesson goals	1	2	0	0	3		
Pupils' learning	3a. Content prior knowledge	4	1	0	0	5	41	35.6
	3b. Expected learning behavior	16	2	0	0	18		
	3c. Observed learning behavior	0	0	12	6	18		
Teaching activities	4a. Meaning making	6	0	0	0	6	56	48.7
	4b. Walking in the shoes of the characters	18	8	4	2	32		
	4c. Walking in the shoes of the peers	3	4	4	0	11		
	4d. Modeling	0	1	0	0	1		
	4e. General educational need	4	1	1	0	6		
	<i>Total</i>	63	23	21	8	115	115	100

Note(s): P = Preparation meeting before the first research lesson, E = Evaluation meeting after a research lesson

Source(s): Created by the author

Table 3. Overview of number of assigned codes per aspect per LS team 1

observations of LS team 1 were more general in nature and focused on the behavior of the class as a whole, rather than on collecting specific information about the perspective-taking behavior of individual pupils.

3.7 LS team 2

In the three preparation and four evaluation meetings of LS team 2 67% – 113 of the 168 – fragments are subject-pedagogical in nature. In these 113 fragments, LS team 2 discussed subject-pedagogical aspects of the research lesson 199 times. Table 4 shows the distribution of how LS team 2 divided its attention to the aspects over the various meetings, themes and aspects.

LS team 2 discussed all distinguished aspects, in both in the preparation and evaluation meetings. LS team 2 paid relatively more attention to aspects of the themes pupils' learning and teaching activities (29% and 38%, respectively) than to discussing aspects related to subject matter and learning objectives (17% each). Characteristic of the discussions of LS team 2 is the central place occupied by the discussing the observed learning behavior of pupils. For example, after the first research lesson, the LS team concluded that exchanging authentic points of view and explorative talk benefit from a longer, partly class-based exchange of points of view (4c). This intervention was carried out in the second research lesson after which a member of the team observed and concluded: *"I noticed that in the beginning they don't really get going. Then they don't justify what they think. Then they are very concerned with exchanging information, consensus-oriented. But the longer they speak, the*

Theme	Aspect	P1	P2	P3	E1	E2	E3	E4	Sub-total	Total	%
Subject matter	1a. Defining subject matter	6	2	0	0	3	5	1	17	33	16.6
	1b. Defining supplementary subject matter	1	0	0	2	0	0	0	3		
	1c. Understanding relationship between subject matter and teaching materials	5	3	0	0	3	2	0	13		
Learning objectives	2a. Embedding	4	0	0	1	0	1	0	6	33	16.6
	2b. Relevance	2	0	0	2	0	1	2	7		
	2c. Lesson goals	7	2	4	4	0	3	0	20		
Pupils' learning	3a. Content prior knowledge	0	0	1	0	0	1	0	2	58	29.1
	3b. Expected learning behavior	10	1	3	0	2	0	0	16		
	3c. Observed learning behavior	1	6	1	11	6	12	3	40		
Teaching activities	4a. Meaning making	2	0	0	1	0	3	2	8	75	37.7
	4b. Walking in the shoes of the characters	6	4	1	0	3	3	2	19		
	4c. Walking in the shoes of the peers	5	4	4	8	2	1	2	26		
	4d. Modeling	0	3	0	3	1	1	0	8		
	4e. General educational need	11	1	0	1	0	1	0	14		
	<i>Total</i>	60	26	14	33	20	34	12	199	199	100

Table 4.

Overview of number of assigned codes per aspect per LS team 2

Note(s): P = Preparation meeting before the first research lesson, E = Evaluation meeting after a research lesson

Source(s): Created by the author

more they say, like 'Yes, but I actually think it's more like this, what do you think?' And that's why it's nice that the discussions of assignment 2 are quite long."

4. Discussion and conclusion

In this exploratory study, we analyzed content of LS conversations in ITE to investigate the extent to which exchanges about subject-pedagogical aspects of the research lesson take place and which subject-pedagogical aspects are discussed. In both LS teams in ITE, more than two-thirds of the fragments pertained to subject-pedagogical aspects. Although the teams covered the full spectrum of the distinguished themes and aspects within it, they paid relatively more attention to the "how" (the pupils' learning and teacher activities) than to the "what" and "why" (the subject matter and learning objectives) of learning and teaching perspective taking. This may be a logical outcome, as there are many learning and teaching activities conceivable to achieve one lesson objective. However, this also may be due to the specific context of this LS in ITE. The LS teams' unfamiliarity with teaching perspective taking and the fact that it was a stand-alone project may have led to focus more on how they were going to revise the teaching and learning activities included in the example material than on, for example, the relevance of learning perspective taking and the embedding in the curriculum. We recommend that in (research into) LS attention should be paid to the possible consequences of working with given teaching materials and self-chosen subjects for the content of the conversations.

Introducing heterogeneity via the different compositions of the LS teams provides starting points for optimizing the subject-pedagogical exchange during LS in ITE, taking into account the various knowledge and skills that arise from the various teaching experiences. In [Table A2](#) we provide an overview of the results for each team. The two most striking substantive differences between the conversations of both LS teams occurred in the topic of pupils' learning. Whereas the less experienced LS team 2 barely discussed the content prior knowledge and expected learning behavior during the preparation meetings, the experienced LS team 1 did so much more extensively. A possible explanation is that the novice teachers were less likely to possess the practical knowledge necessary to properly assess the content prior knowledge and to hypothesize how pupils would respond to the lesson ([Van Veen and Van de Ven, 2008](#)). Less experienced LS teams might benefit from carrying out a more extensive problem analysis, such as by conducting a small preliminary study of the pupils' initial situation (see e.g. [Lee, 2019](#)), or by conducting a mock-up lesson ([Lewis et al., 2019](#)).

A second difference concerns the focus of the observations during the research lesson. The observations of the less experienced LS team 2 were largely focused on the perspective-taking behavior of individual pupils. In contrast, the observations of the more experienced LS team 1 were more general in nature and were focused on the behavior of the class as a whole. Targeted observations of individual pupils' learning during LS are necessary to be able to analyze what the impact of the research lesson is on pupils' subject-specific learning ([Van Es, 2011](#); [Wood et al., 2019](#)). The lack of practical knowledge of the less experienced LS team may have created a need to explore this impact more deeply than the experienced LS team 2. The experienced LS team 1 may have experienced the phenomenon that teachers find it difficult to bring congruence between what they want to learn from LS in ITE, their research question and the research lesson. This phenomenon has often been found in LS research ([Amador and Weiland, 2015](#); [Fernandez and Chokshi, 2002](#); [Bakker et al., 2022](#); [Uffen et al., 2022](#)). Perhaps conversation cards or guided questions ([Næsheim-Bjørkvik and Larsson, 2019](#)) could help LS teams in ITE keep the focus on answering the research question and all LS activities arising from that question.

This explorative study has some limitations. First, it is conceivable that part of the subject-pedagogical exchange took place outside the recorded LS conversations, for example, during short private chats during breaks. A second limitation is that we have not analyzed the

contribution of each teacher and the participating ST in particular. It is known that internship supervisor and ST collaboration is characterized by asymmetry, in terms of status, power and experience (Cajkler and Wood, 2016c). Although we noticed that the ST of the LS team with the supervisor asked less questions and asked less about considerations than the ST of the other team, we do not know whether this may be due to the participation of the supervisor, or differences in conversation skills. Follow-up research with a larger number of LS teams in ITE in varied compositions is necessary to make valid statements about this possible impact.

Concluding, we found that the conversations of both LS teams in ITE focused mainly on subject-pedagogical aspects of the research lesson and that almost all distinct subject-pedagogical aspects were discussed. That is an encouraging result because this subject-pedagogical exchange is a necessary condition to help STs develop and deepen their subject pedagogic knowledge, views and routines (Amador and Weiland, 2015; Cajkler *et al.*, 2013; Grossman *et al.*, 2009). Follow-up research could focus on whether and how LS teams in ITE bring coherence to the attention to subject-pedagogical aspects of the lesson. In this context, the concept of noticing could be helpful. In noticing, teachers construct meaningful reasoning about their pupils' learning and teaching, linking their identifications of pupils' learning, their interpretations of it and plans for learning objectives, subject matter and teaching activities in a subsequent lesson (Jacobs *et al.*, 2010; Mason, 2011; Van Es, 2011).

References

- Amador, J. and Weiland, I. (2015), "What preservice teachers and knowledgeable others professionally notice during lesson study", *The Teacher Educator*, Vol. 50 No. 2, pp. 109-126, doi: [10.1080/08878730.2015.1009221](https://doi.org/10.1080/08878730.2015.1009221).
- Anderson, E.R. (2017), "Accommodating change: relating fidelity of implementation to program fit in educational reforms", *American Educational Research Journal*, Vol. 54 No. 6, pp. 1288-1315, doi: [10.3102/0002831217718](https://doi.org/10.3102/0002831217718).
- Bae, C.L., Hayes, K.N., Seitz, J., O'Connor, D. and DiStefano, R. (2016), "A coding tool for examining the substance of teacher professional learning and change with example cases from middle school science lesson study", *Teaching and Teacher Education*, Vol. 60, pp. 164-178, doi: [10.1016/j.tate.2016.08.016](https://doi.org/10.1016/j.tate.2016.08.016).
- Bakker, C., de Gloppe, K. and de Vries, S. (2022), "Noticing as reasoning in Lesson Study teams in initial teacher education", *Teaching and Teacher Education*, Vol. 113, pp. 1-13, doi: [10.1016/j.tate.2022.103656](https://doi.org/10.1016/j.tate.2022.103656).
- Berliner, D.C. (2004), "Expert teachers: their characteristics, development and accomplishments", *Bulletin of Science, Technology and Society*, Vol. 24 No. 3, pp. 200-212.
- Birch, S.A. and Bernstein, D.M. (2007), "What can children tell us about hindsight bias: a fundamental constraint on perspective-taking?", *Social Cognition*, Vol. 25 No. 1, pp. 98-113, doi: [10.1521/soco.2007.25.1.98](https://doi.org/10.1521/soco.2007.25.1.98).
- Boeije, H.R. (2009), *Analysis in Qualitative Research*, Sage, Thousand Oaks, CA.
- Cajkler, W. and Wood, P. (2016a), "Adapting 'lesson study' to investigate classroom pedagogy in initial teacher education: what student-teachers think", *Cambridge Journal of Education*, Vol. 46 No. 1, pp. 1-18, doi: [10.1080/0305764X.2015.1009363](https://doi.org/10.1080/0305764X.2015.1009363).
- Cajkler, W. and Wood, P. (2016b), "Lesson study and pedagogic literacy in initial teacher education: challenging reductive models", *British Journal of Educational Studies*, Vol. 64 No. 4, pp. 503-521, doi: [10.1080/00071005.2016.1164295](https://doi.org/10.1080/00071005.2016.1164295).
- Cajkler, W. and Wood, P. (2016c), "Mentors and student-teachers 'lesson studying' in initial teacher education", *International Journal for Lesson and Learning Studies*, Vol. 5 No. 2, pp. 84-98, doi: [10.1108/IJLLS-04-2015-0015](https://doi.org/10.1108/IJLLS-04-2015-0015).

- Cajkler, W., Wood, P., Norton, J. and Pedder, D. (2013), "Lesson study: towards a collaborative approach to learning in initial teacher education?", *Cambridge Journal of Education*, Vol. 43 No. 4, pp. 537-554.
- Carter, I.S.W. and Amador, J.M. (2015), "Lexical and indexical conversational components that mediate professional noticing during lesson study", *Eurasia Journal of Mathematics, Science and Technology Education*, Vol. 11 No. 6, pp. 1339-1361, doi: [10.1080/0305764X.2013.834037](https://doi.org/10.1080/0305764X.2013.834037).
- De Vries, S., Verhoef, N. and Goei, S.L. (2016), *Lesson Study: Een Praktische Gids Voor Het Onderwijs*, Garant Uitgevers, Apeldoorn.
- Dudley, P. (2014), *Lesson Study: A Handbook*, Cambridge, available at: <https://lessonstudy.co.uk/wp-content/uploads/2012/03/new-handbook-revisedMay14.pdf>
- Fernandez, C. and Chokshi, S. (2002), "A practical guide to translating lesson study for a US setting", *Phi Delta Kappan*, Vol. 84 No. 2, pp. 128-134, doi: [10.1177/00317217020840020](https://doi.org/10.1177/00317217020840020).
- Frijters, S., ten Dam, G. and Rijlaarsdam, G. (2008), "Effects of dialogic learning on value-loaded critical thinking", *Learning and Instruction*, Vol. 18 No. 1, pp. 66-82, doi: [10.1016/j.learninstruc.2006.11.001](https://doi.org/10.1016/j.learninstruc.2006.11.001).
- Galinsky, A.D. and Ku, G. (2004), "The effects of perspective-taking on prejudice: the moderating role of self-evaluation", *Personality and Social Psychology Bulletin*, Vol. 30 No. 5, pp. 594-604, doi: [10.1177/0146167203262802](https://doi.org/10.1177/0146167203262802).
- Gess-Newsome, J. (2015), "A model of teacher professional knowledge and skill including PCK: results of the thinking of PCK-summit", in Berry, A., Friedrichsen, P. and Loughran, J. (Eds), *Re-examining Pedagogical Content Knowledge in Science Education*, Routledge, New York/London, pp. 28-41.
- Grossman, P., Schoenfeld, A. and Lee, C. (2005), "Teaching subject matter", in Darling-Hammond, L. and Bransford, J. (Eds), *Preparing Teachers for a Changing World: What Teachers Should Learn and Be Able to Do*, Jossey-Bass, San Francisco, pp. 201-231.
- Grossman, P., Hammerness, K. and McDonald, M. (2009), "Redefining teaching, re-imagining teacher education", *Teachers and Teaching*, Vol. 15 No. 2, pp. 273-289, doi: [10.1080/13540600902875340](https://doi.org/10.1080/13540600902875340).
- Jacobs, V., Lamb, L. and Philipp, R. (2010), "Professional noticing of children's mathematical thinking", *Journal for Research in Mathematics Education*, Vol. 41 No. 2, pp. 169-202, doi: [10.5951/jresmetheduc.41.2.0169](https://doi.org/10.5951/jresmetheduc.41.2.0169).
- Kennedy, M.M. (2016), "How does professional development improve teaching?", *Review of Educational Research*, Vol. 86 No. 4, pp. 945-980, doi: [10.3102/0034654315626800](https://doi.org/10.3102/0034654315626800).
- Kessels, C. (2010), "The influence of induction programs on beginning teachers' well-being and professional development", Doctoral dissertation, Leiden University Graduate School of Teaching, Leiden University.
- Larssen, D. and Drew, I. (2015), "The influence of a lesson study cycle on a 2nd grade EFL picture book-based teaching practice lesson in Norway", *Nordic Journal of Modern Language Methodology*, Vol. 3 No. 2, pp. 92-105, doi: [10.46364/njmlm.v3i2.143](https://doi.org/10.46364/njmlm.v3i2.143).
- Larssen, D.L.S., Cajkler, W., Mosvold, R., Bjuland, R., Helgevold, N., Fauskanger, J., Wood, P., Baldry, F., Jakobsen, A., Bugge, H.E., Næsheim-Bjørkvik, G. and Norton, J. (2018), "A literature review of lesson study in initial teacher education: perspectives about learning and observation", *International Journal for Lesson and Learning Studies*, Vol. 7 No. 1, pp. 8-22, doi: [10.1108/IJLLS-06-2017-0030](https://doi.org/10.1108/IJLLS-06-2017-0030).
- Lee, M.Y. (2019), "The development of elementary pre-service teachers' professional noticing of pupils' thinking through adapted lesson study", *Asia-Pacific Journal of Teacher Education*, Vol. 47 No. 4, pp. 383-398, doi: [10.1080/1359866X.2019.1607253](https://doi.org/10.1080/1359866X.2019.1607253).
- Lewis, J.M. (2016), "Learning to lead, leading to learn: how facilitators learn to lead lesson study", *ZDM*, Vol. 48 No. 4, pp. 527-540, doi: [10.1007/s11858-015-0753-9](https://doi.org/10.1007/s11858-015-0753-9).
- Lewis, C. and Perry, R. (2014), "Lesson study with mathematical resources: a sustainable model for locally-led teacher professional learning", *Mathematics Teacher Education and Development*, Vol. 16 No. 1, doi: [10.1007/s11858-015-0753-9](https://doi.org/10.1007/s11858-015-0753-9).

- Lewis, C., Friedkin, S., Emerson, K., Henn, L. and Goldsmith, L. (2019), "How does lesson study work? Toward a theory of lesson study process and impact", in Huang, R., Takahashi, A. and da Ponte, J.P. (Eds), *Theory and Practice of Lesson Study in Mathematics. Advances in Mathematics Education*, Springer, Cham, doi: [10.1007/978-3-030-04031-4_2](https://doi.org/10.1007/978-3-030-04031-4_2).
- Loughran, J., Mulhall, P. and Berry, A. (2004), "In search of pedagogical content knowledge in science: developing ways of articulating and documenting professional practice", *Journal of Research in Science Teaching*, Vol. 41 No. 4, pp. 370-391, doi: [10.1002/tea.20007](https://doi.org/10.1002/tea.20007).
- Magnussen, S., Krajcik, J. and Borko, H. (1999), "Nature, sources, and development of pedagogical content knowledge for teaching", in Gess-Newsome, J., Lederman, N.G. and Association for the Education of Teachers in Science (Eds), *Examining Pedagogical Content Knowledge: The Construct and its Implications for Science Education*, Kluwer Academic, Dordrecht, pp. 95-132.
- Mason, J. (2011), "Roots and branches", in Sherin, M., Jacobs, V. and Philipp, R. (Eds), *Mathematics Teacher Noticing: Seeing through Teachers' Eyes*, Routledge, New York, pp. 35-50.
- Munthe, E., Bjuland, R. and Helgevold, N. (2016), "Lesson study in field practice: a time-lagged experiment in initial teacher education in Norway", *International Journal for Lesson and Learning Studies*, Vol. 5 No. 2, pp. 142-154, doi: [10.1108/IJLLS-12-2015-0047](https://doi.org/10.1108/IJLLS-12-2015-0047).
- Næsheim-Bjørkvik, G. and Larssen, D.L.S. (2019), "Reflective practice and the lesson study process in initial teacher education", in Wood, P., Larssen, D.L.S., Helgevold, N. and Cajkler, W. (Eds), *Lesson Study in Initial Teacher Education: Principles and Practices*, Emerald Publishing, Bingley, pp. 105-118.
- Onderwijsraad (2011), "Onderwijs vormt. den haag: Onderwijsraad. (Education council, 2011)", Education subjectivizes. The Hague: Education Council).
- Quinn, D.M. and Kim, J.S. (2017), "Scaffolding fidelity and adaptation in educational program implementation: experimental evidence from a literacy intervention", *American Educational Research Journal*, Vol. 54 No. 6, pp. 1187-1220, doi: [10.3102/0002831217717](https://doi.org/10.3102/0002831217717).
- Shulman, L.S. (1986), "Those who understand: knowledge growth in teaching", *Educational Researcher*, Vol. 15 No. 2, pp. 4-14, doi: [10.3102/0013189X0150020](https://doi.org/10.3102/0013189X0150020).
- Swanborn, P. (2010), *Case Study Research: What, Why and How?*, Sage, Thousand Oaks, CA.
- Uffen, I., De Vries, S., Goei, S., Van Veen, K. and Verhoef, N. (2022), "Understanding teacher learning in lesson study through a cultural-historical activity theory lens", *Teaching and Teacher Education*, Vol. 119 No. 103831, pp. 1-13, doi: [10.1016/j.tate.2022.103831](https://doi.org/10.1016/j.tate.2022.103831).
- Van Beek, F., Van den Bergh, H., Leenders, E., Rijlaarsdam, G.C.W., Bonset, H., Oosterloo, A. and Vernooij, K. (2008), "Over de drempels met taal: de niveaus voor de taalvaardigheid. Onderdeel van de eindrapportage van de Expertgroep Doorlopende Leerlijnen Taal en Rekenen, Enschede The Netherlands. [Over the thresholds with language: the levels for language skill. Part of the final report of the Expert Group Continuous Learning Pathways Language and Mathematics]".
- Van Es, E.A. (2011), "A framework for learning to notice student thinking", in Sherin, M., Jacobs, V. and Philipp, R. (Eds), *Mathematics Teacher Noticing: Seeing through Teachers' Eyes*, Routledge, New York, pp. 134-151.
- Van Veen, K. and Van de Ven, P.-H. (2008), "Integrating theory and practice: learning to teach L1 language and literature", *L1-Educational Studies in Language and Literature*, Vol. 8 No. 4, pp. 39-60, doi: [10.17239/L1ESLL-2008.08.04.05](https://doi.org/10.17239/L1ESLL-2008.08.04.05).
- Verloop, N., Van Driel, J. and Meijer, P. (2001), "Teacher knowledge and the knowledge base of teaching", *International Journal of Educational Research*, Vol. 35 No. 5, pp. 441-461, doi: [10.1016/S0883-0355\(02\)00003-4](https://doi.org/10.1016/S0883-0355(02)00003-4).
- Wenger, E. (2000), "Communities of practice and social learning systems", *Organization*, Vol. 7 No. 2, pp. 225-246, doi: [10.1177/1350508400720](https://doi.org/10.1177/1350508400720).
- Wood, P., Larssen, D.L.S., Helgevold, N. and Cajkler, W. (Eds) (2019), *Lesson Study in Initial Teacher Education: Principles and Practices*, Emerald Publishing, Bingley.

Zwart, R.C., Wubbels, T., Bergen, T. and Bolhuis, S. (2009), "Which characteristics of a reciprocal peer coaching context affect teacher learning as perceived by teachers and their students?", *Journal of Teacher Education*, Vol. 60 No. 3, pp. 243-257, doi: [10.1177/002248710933369](https://doi.org/10.1177/002248710933369).

Appendix

Theme	Subtheme	Examples from the conversations
Subject matter	1a. Defining subject matter	So perspective taking is not empathizing. You have to leave that part out. It's moving into someone's feelings, but you shouldn't empathize
	1b. Defining additional subject matter	I would like to add the concepts of cooperative and constructive talk
	1c. Understanding relationship between subject matter and teaching materials	With this case you show the two sides of that dilemma and pupils have to say: What is the solution to that problem?
Learning objectives	2a. Embedding in the school subject	Shall we just relate that to debating what we're going to do later this year?
	2b. Relevance	D3: Yes, why is literature very important for learning perspective taking? (. . .) D1: That you get more understanding for other characters D3: And you are less quick to judge
	2c. Lesson goals	Because you start here again with this story "Shivering." And that's kind of the attention grabber
Pupils' learning	3a. Initial situation	Yes, empathy is not highly developed in this class, I notice
	3b. Expected learning behavior	There they will ask a thousand times how to do that
	3c. Observed learning behavior	Those girls saw nothing but that you can't do it. I think they can delve into that situation a little less than the boys
Teaching activities	4a. Meaning making	We could add that you can better put yourself in shoes of characters who feel closer to you. That you can better imagine why they do things
	4b. Walking in the shoes of the characters	I think we should also pay attention to this in the discussion. If they start explaining things then you say: Well this is your statement. What's your argument for that? And: Explain. Why would you think that?
	4c. Walking in the shoes of peers	Yes, well that's why we want to make that very clear with those three words, that you can work competitively, cooperatively and constructively. With a short explanation below and that you don't necessarily have to agree with a group
	4d. Modeling	You could keep it in there, only point out those words and then let pupils cross "shocked" and "desperate" themselves
	4e. General educational needs	Yeah, so we're going to change this to something more concrete because that's too abstract

Source(s): Created by the author

Table A1.
Examples from the conversations, related to the final code tree

Theme	Sub theme	LS team 1			LS team 2		
		Sub-total	Total	%	Sub-total	Total	%
Subject matter	1a. Defining subject matter	7	10	8.7	17	33	16.6
	1b. Defining supplementary subject matter	0			3		
	1c. Understand relationship between subject matter and teaching materials	3			13		
Learning objectives	2a. Embedding	1	8	7.0	6	33	16.6
	2b. Relevance	4			7		
	2c. Lesson goals	3			20		
Pupils' learning	3a. Content prior knowledge	5	41	35.6	2	58	29.1
	3b. Expected learning behavior	18			16		
	3c. Observed learning behavior	18			40		
Teaching activities	4a. Meaning making	6	56	48.7	8	75	37.7
	4b. Walking in the shoes of the characters	32			19		
	4c. Walking in the shoes of the peers	11			26		
	4d. Modeling	1			8		
	4e. General educational need	6			14		
	<i>Total</i>	115	115	100	199	199	100

Table A2.
Overview of number of assigned codes per theme and subtheme per both LS teams

Source(s): Created by the author

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