Peer cooperation during teaching in paired field placements: Forms and challenges

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Abstract

Paired field placement is an important element of teacher education where student teachers can acquire professional cooperative skills through team teaching. However, little is known about challenges that student teachers face during team teaching. Also, knowledge about challenges during the team teaching process (e.g. planning, instruction, reflection) is scarce. This study focuses on pre-primary and primary student teachers' challenges with peer cooperation during team teaching, the problems they face, and how they cope with negative experiences. Data were collected from 30 student teachers through in-depth, semi-structured interviews. Results reveal various forms of conflict during different phases of peer cooperation in team teaching such as lack of flexibility due to pressure to follow agreements, or unclear roles and responsibilities. Instruction turns out to be the most challenging phase of team teaching, with lack of compatibility with the peer as the most frequent reason for problems. Reflection is rarely used in a cooperative setting. The findings also revealed the frequent use of reactive strategies to cope with challenges, particularly the strategy of avoiding problems.

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1. Introduction

Cooperation among teachers has proven to positively influence teaching quality (Organisation for Economic Co-Operation and Development [OECD], 2019), and students have shown higher achievement in schools where teachers cooperate (Ronfeldt et al., 2015). Standards for teacher education (Cochran-Smith, 1991; Darling-Hammond, 1996) have highlighted cooperation as a professional skill that needs to be developed (Thousand et al., 2006). Teachers express a need for training and preparation for cooperation (Murawski & Dieker, 2008), and the National Council for the Accreditation of Teacher Education (2010) also encourages US teacher education programmes to implement cooperation models, such as team teaching in field placements where student teachers are introduced to practice through student teaching.

What is known of cooperation in field placements? Studies have confirmed the power of collaborative learning in different practicum settings and teacher education contexts (for a review see Cohen et al., 2013) as well as student teachers' cooperation in pairs with a cooperating or mentor teacher (e.g. Goodnough et al., 2009). Although studies on team teaching in paired field placements have highlighted benefits for student teachers (Baeten & Simons, 2014; Kamens, 2007), there is also evidence that paired field placement can be challenging and lead to negative experiences (e.g. Guise et al., 2017; Nokes et al., 2008). To date, few studies have paid close attention to the specific challenges of peer cooperation in field placements (Baeten & Simons, 2014; Dang, 2013; Goodnough et al., 2009). According to Dang (2017, p. 327), specific attention "should be paid to the process of collaboration in paired-placements, to optimize the resolution of conflicts and the conditions that lead to teacher learning in pairs". This study therefore aims to identify and understand the forms of team teaching and challenges that student teachers face during team teaching in paired field placement during different phases of teaching (including the phases of planning, instruction and reflection) and, thus, phases of cooperation (e.g. Dang, 2013). It aims to contribute to a better understanding of paired field placements as learning situations by analysing the challenges of cooperation and coping strategies from student teachers' perspective. The added value of the identification of student teachers' challenges and coping strategies is twofold: first, it can enrich our knowledge of how personal growth and professional development in paired field placements can be enhanced or impeded; second, it can inform teacher education and mentor teachers to better understand when student teacher cooperation needs support in paired field placements. Thus, the findings can help to improve the quality of paired field placements.

2. Cooperation in the teaching profession

The importance of the idea of cooperation for effective teaching can be aligned with different learning theories (for a review see Dillenbourg et al., 1996 and Hämäläinen & Vähäsantanen, 2011). Generally, the theoretical rationale for cooperation is rooted in cognitive-developmental and learning perspectives, grounded in the work of Piaget (1926), Vygotsky's (1978) socio-cultural approach, and the notion of situated learning based on the theory by Lave and Wenger (1991). Teacher cooperation was addressed by Little (1990), who differentiated four models of cooperation: storytelling and scanning for ideas, aid and assistance, sharing and joint work. It is further discussed under the umbrella of a variety of constructs and practices, such as co-teaching, team teaching and cooperative teaching or collaboration (see Baeten & Simons, 2014). Nissen et al. (2014, p. 473) suggested viewing cooperation and collaboration "as two different forms of interaction" that, for instance, can result when teachers work together with special education teachers. Similarly, Arnold et al. (2012, p. 433) stated that "cooperation allows for some independent work of group members, who take responsibility for specific subtasks to be assembled into a larger whole at the end", whereas collaboration implies more direct interaction among individuals to create a common product and involves negotiations, discussions and accommodating others' perspectives. Thus, the term "cooperation" seems to refer to a broader concept, recognizing different roles and functions of the participants, and may include collaborative activities and co-construction. We acknowledge previous research that has shown that cooperation can take various forms (Kamens, 2007) and allow this definition to include a variety of various work-related interactions, such as informal exchange, sharing ideas, mutual support, co-teaching in a classroom and common reflection on

instruction. More concretely, we use the term "cooperation" according to Baeten and Simons (2014, p. 93), with "two or more teachers in some level of collaboration in the planning, delivery and/or evaluation of a course," as this definition stipulates that the participants enjoy a similar status and covers the whole process of teaching and cooperation. This definition shows that professional cooperation is a complex and challenging task. With regard to teacher education, it is therefore interesting to know how pre-service teachers are introduced to peer cooperation in the teaching profession and how they learn to cooperate during teacher education and, more specifically, during paired field placements.

3. Student teacher peer cooperation in paired field placement

Paired field placement is a form of partnered student teaching (Gardiner & Robinson, 2009) that allows peer cooperation. Cooperation in partnered student teaching can take a variety of forms, models and formats (e.g. Baeten & Simons, 2014), such as "station teaching" or the "one teach, one support" approach (e.g. Friend et al., 2010) with team teaching as a prominent model.

3.1 Student teacher team teaching

Team teaching has been recognized as a promising model of student teaching during field experiences, such as in language classes (e.g. Barahona, 2017; Carless, 2006; Liu, 2008). A meta-analysis conducted by Baeten and Simons (2014, p. 95) revealed five models of team teaching. (1) In the observation model, the teaching is carried out by a person who is observed by a partner. The responsibility for the entire course of the lesson lies with the person teaching. (2) In the coaching model, the lesson is conducted by one person, the partner has an advisory function in addition to the role of observer (e.g. feedback, suggestions for improvement). One teacher has the overall responsibility for the course of the lesson. (3) In the assistant teaching model, one person has the main responsibility for teaching, while the partner assists. Although one person has the overall responsibility for the lesson, the assisting partner takes over a part of the responsibility, for example, for the individual assistance of single students. (4) In the equal status model, teaching is based on equal partnership. All persons work under common objectives and responsibility. This form of team teaching requires joint lesson preparation and includes three subforms: sequential teaching (teaching is divided into sequences), parallel teaching (groups of students are taught simultaneously by different teachers) and station teaching (teachers are responsible for specific parts during the teaching process). (5) In the teaming model, classes are conducted under an equal partnership. All persons work under common objectives and assumption of responsibility. This form of team teaching requires joint lesson preparation and includes three subforms: parallel, sequential and station teaching.

Baeten and Simons (2014) shed light on the roles and responsibilities depending on these five team teaching models. They found that the "equal status model" was the most frequently used team teaching model during paired field placements (Baeten & Simons, 2016). A comparison between "sequential teaching" and "parallel teaching" (both equal status models) showed that student teachers have positive feelings towards both models (Simons et al., 2020).

3.2 Benefits of student teacher peer cooperation

There is a growing body of evidence that shows the benefits of student teacher peer cooperation. Generally, team teaching is positively appraised (Anderson & Speck, 1998), and student teachers appreciate having a partner to provide continuous feedback and encouragement while teaching (Kamens, 2007). Benefits include emotional and professional support (e.g. Bullough et al., 2002; Goodnough et al., 2009; Stairs et al., 2009; Tsybulsky & Muchnik-Rozanov, 2019), increased dialogue (e.g. Sorensen, 2014), support for professional development (e.g. Goodnough et al., 2009) and personal growth (e.g. Barahona, 2017; Dang, 2013; Simons et al., 2020). It can also help to reduce feelings of isolation (Kelchtermans, 2006).

Studies also highlight the importance of peer cooperation as a learning approach (e.g. Johnson & Johnson, 2009; Topping, 2005). Student teacher cooperation can be seen as an opportunity to learn from each other, for

example through peer coaching and mentoring (e.g. Howlett & Nguyen, 2020; Wynn & Kromrey, 2000). Specifically, peer cooperation can be a mutual stimulus during co-planning through the exchange of ideas (Tsybulsky, 2019). During paired field placements, peer cooperation may involve reflective co-generative dialogue to improve teaching quality (Birrell & Bullough, 2005; Wassell & LaVan, 2009) – for instance, peers discuss issues that impact teaching and learning in order to collaboratively develop solutions through reflective discussions (Scantlebury et al., 2008). Student teacher peer cooperation offers mutual guidance in the classroom by sharing responsibilities in managing student learning (Darragh et al., 2011). Other advantages may be related to classroom management, as two people monitor school students in the classroom (Kamens, 2007; Nokes et al., 2008). Peer cooperation also seems to support student teachers in coping with stress (Birrell & Bullough, 2005; Goodnough et al., 2009).

3.3 Challenges of student teacher peer cooperation

Despite these benefits, research has shown that student teacher peer cooperation can be challenging and even fail. Working with a peer might be an unfamiliar situation that can lead to difficulties (Bashan & Holsblat, 2012). Difficulties are related to a peer's willingness to cooperate, as peer placements often do not reflect a realistic teaching situation in daily work (Gardiner & Robinson, 2011). Student teacher concerns also relate to the worry that there will be fewer teaching opportunities during peer placements (Kamens, 2007). Lack of time and increased workload are one of the most frequently mentioned challenges during team teaching (e.g. Nokes et al., 2008). Instructional activities must be coordinated, which means that additional time is required (Simons et al., 2020; Tsybulsky, 2019). Additionally, cooperation partners need to be able to negotiate and discuss concerns in a way that is mutually beneficial, and discrepant perspectives may lead to conflicts (Nokes et al., 2008). Concerns about differences in teaching styles during student teacher cooperation are cited as disadvantages (Nokes et al., 2008). Tensions may occur when student teachers provide peer feedback (Shin et al., 2007). Although peer feedback might be more detailed and frequent than that of teachers (Gardiner & Robinson, 2009), it is also criticized as being too lenient and for its lack of quality (Baeten & Simons, 2014).

There is evidence that challenges of peer cooperation are related to the process of team teaching and that challenges might differ according to the specific teaching task. For example, a case study conducted by Kamens (2007) showed that difficulties in student teacher cooperation are related to tensions arising during preparation time. Student teachers face challenges when structuring cooperative activities during co-planning and disagreement during the planning activities results in working independently (Dieker, 2001). Effective co-planning requires building a common understanding of shared goals (Mastropieri et al., 2005) as well as daily interactions on a regular basis to foster ongoing discussions and reflections on teaching (Gallo-Fox & Scantlebury, 2016; Murawski & Lochner, 2011). However, research into student teacher challenges in field placements that takes the process of team teaching (planning/preparation, instruction and reflection) into account remains scarce. Furthermore, little is known about how student teachers cope with the challenges they face during peer cooperation.

3.4 Coping with challenges during student teacher peer cooperation

Although student teachers often view field experiences as the most valuable parts of teacher education, they also consider them as stressful experiences (Admiraal, 2020; MacDonald, 1993; Murray-Harvey et al., 2000). Stress in field placements can result from a lack of strategies for managing classroom interaction (Clunies-Ross et al., 2008; Heikonen et al., 2017). A study conducted by Murray-Harvey et al. (2000) revealed that student teachers regarded mentor teachers as the most important source for coping with stress, but little is known about whether they manage challenges individually or together, or about how they cope with challenges in different phases of peer cooperation during paired field placements.

Individual patterns and activities for dealing with challenges can be described as *coping strategies*, which help "to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). According to Lazarus and Folkman (1984), coping can be

distinguished in two categories: *emotion-focused* (the individual regulates emotions under distress) and *problem-focused* (the individual avoids or makes efforts to solve the problem causing the distress). Endler and Parker (1999) added as a third category, task-oriented coping, in which the individual refers to strategies used to solve the problem by reconceptualizing it. There are several studies that include a variety of coping actions, categorizations and concepts (Carver et al., 1989; Schwarzer & Schwarzer, 1996; Skinner et al., 2003). Coping strategies are also categorized as active (efforts to deal with problems) or inactive (avoid the problems).

In the context of the teaching profession, two additional strategies are discussed that are predominantly used by teachers in addressing misbehaviour in classrooms (Clunies-Ross et al., 2008; Wilks, 1996). *Proactive* coping strategies include future-oriented efforts to anticipate, influence and control events, that is, setting clear rules in a classroom or altering a situation before problems escalate. They include behaviours to cope with challenges, such as acting in advance to prevent either an event or a potential future stressor (Aspinwall & Taylor, 1997). *Reactive* coping strategies are defined as "immediate and spontaneous responses focused on an event that had already occurred" (Heikonen et al., 2017, p. 540). They are conceptualized as strategies to tackle and deal with situations in the classroom after they have turned into problems (Clunies-Ross et al., 2008). According to Reupert and Woodcock (2010), student teachers reported that they are more likely to use reactive strategies in the classroom, although they considered proactive strategies to be more effective. Compared to student teachers who tend to use reactive coping strategies (e.g. avoidance strategies), student teachers who use proactive coping strategies (e.g. problem-solving strategies) tend to experience less stress (Gustems-Carnicer et al., 2019). Heikonen et al. (2017) showed that student teachers used reactive behavioural strategies most frequently in challenging classroom situations in order to take control of the situation. Reactive coping strategies are thus often characterized as "survival-oriented" (Heikonen et al., 2017, p. 544).

Coping strategies depend on the situation, and results from studies of effective coping strategies for managing school student (mis)behaviour (e.g. Admiraal et al., 2000; Clunies-Ross et al., 2008; Heikonen et al., 2017) cannot simply be translated to other situations. There is evidence that cooperation with colleagues might be helpful (Blase, 1989; Lindqvist et al., 2017). Lindqvist et al. (2020) found that student teachers use various methods of cooperation as forms of proactive coping, such as seeking help and guidance from other more experienced colleagues, when challenges arise. Student teachers share adversity with a trusted ally when conflicts arise with other teachers. Common collaborative coping strategies included getting allies to address issues cooperatively. There is also evidence that using avoidance is common as a reactive strategy in order to cope with stress (Gustems-Carnicer et al., 2019). However, there is still a need for knowledge on how student teachers cope with challenging situations during paired field placement when they are partnered with a peer.

4. The current study

Along with the benefits of team teaching during paired field placements (Baeten & Simons, 2014; Dang, 2013), studies have revealed the difficulties experienced by student teachers when they work with peers (Kamens, 2007). Studies on team teaching have primarily focused on cooperation during instruction (e.g. Baeten & Simons, 2016). However, the teaching and cooperation process also includes preparation and reflection. This study thus aimed to identify and understand the challenges that student teachers face during the overall process of team teaching. We also tried to gain a better understanding of how student teachers manage, adapt and respond to challenges in the different phases of team teaching. A knowledge of how student teachers cope with those challenges could inform teacher education programmes regarding how to promote student teacher cooperation skills at an early stage of their training. Based on earlier work by Baeten and Simons (2014) regarding the advantages and disadvantages of team teaching in paired field experiences, we addressed the following research questions:

RQ1: *Which forms of cooperation do student teachers describe during different phases of team teaching (planning, instruction, reflection) in paired field placements?*

RQ2*: What challenges of peer cooperation during different phases of team teaching (planning, instruction, reflection) in paired field placements do student teachers report?*

RQ3: *How do student teachers cope with peer cooperation challenges during different phases of team teaching (planning, instruction, reflection) in paired field placements?*

5 Methodology

5.1 Context and participants

The present qualitative study was part of a larger mixed-methods research project, "Cooperation in field experiences" (2014–2017), that was a joint venture between the Institute of Educational Science, Department of Research in School and Instruction, at the University of Bern and the Institute of Primary Education of the University of Teacher Education in Bern. The aim of the project was to examine student teacher cooperation during paired field placements to understand which forms of cooperation are realized and how cooperation skills among student teachers are developed.

All participants for this substudy were enrolled in a teacher preparation programme for pre-primary and primary education at the University of Teacher Education in Bern. This programme leads to a primary school teacher bachelor's degree (180 ECTS) and includes five practica structured into three teaching practice modules (43 ECTS). The practica last two to six weeks and four of the five practica are organized in pairs with partners from the same semester. Reasons for pairing are mainly based on organizational reasons, i.e. pairing enables field placements for all student teachers despite a shortage of capacity in schools. Pairing is also expected to support the development of student cooperation skills (Gardiner & Robinson, 2009). However, no explicit curricular guidelines or mentor teacher preparation exist. As most of the student teachers did not know each other at the beginning of their studies, they are randomly assigned into pairs for the first practicum. In the three subsequent practica, student teachers have a say in pairing and can choose a pair. The last practicum is placed close to graduation, covers six weeks and is organized as an individual practicum (Table 1).

Table 1: Overview of teacher preparation programme: Field placements

Teaching Practice Module 1		Teaching Practice Module 2		Teaching Practice Module 3
Orientation practicum Basics of teaching		Specialized internship Subject-related teaching and learning		Individual practicum Multi-perspective approach; individual focus
Clarifying professional aptitude through critical reflection on the career objective. Student teachers dealt with the basics of teaching and gave a self-assessment of their professional aptitude.		Implementation of various concepts of lesson planning and instruction. Student teachers create learning settings based on school students need.		Student teachers improve their competence by comprehensively exploring their profession on an individual basis. The student teachers take on the role of a classroom teacher or learn administrative procedures.
Practicum 1 (8 half days and 2 weeks block)	Practicum 2 (2 weeks)	Practicum 3 (3 weeks)	Practicum 4 (4 weeks)	Practicum 5 (5 weeks)
with partner	with partner	with partner	with partner	single

Three teaching practice modules (TPM1–3) can be differentiated. TPM1 includes an orientation practicum (Practicum 1) at the beginning of student teachers' studies that consists of eight half days and two weeks, as well as a second two-week practicum (Practicum 2) at the end of the second semester. Both practica focus on an induction into the basics of teaching, and student teachers are expected to clarify professional suitability through a critical examination of career goals. TPM2 covers two practica (Practicum 3 and 4) during the second academic year, which last three and four weeks and focus on learning and teaching. Student teachers apply different approaches in planning and instruction and should learn to consider the learning of school students. Tandem partners in TPM1 are usually different in TPM2. TPM3 involves a final six-week long-term practicum in the third year (Practicum 5), which aims to support student teachers' professional growth. Student teachers set individual goals for teaching and learning in the last internship.

Across all practica, student teachers are mentored by expert school teachers and are occasionally visited by university supervisors. Further support includes a parallel module at the University of Teacher Education in Bern, comprising a teaching practice group and a specialist support group. The teaching practice group consists of several student teachers, a university supervisor and a mentor teacher and provides the opportunity to participate in and instigate discussions about field experiences. Student teachers can connect and share their experiences with peers and obtain advice from university supervisors and mentor teachers. This mandatory module, however, does not explicitly include discussions related to team teaching in paired placements. There are also no guidelines or recommendations regarding student teacher peer cooperation. Student teachers are encouraged to actively take responsibility for their own professionalization. Although mentor teachers are expected to carefully supervise student teachers, they are not explicitly instructed to mentor paired field experiences.

5.2 Sample

A random selection of 70 out of nearly 200 students who had already participated in the framework study were invited to participate in the interviews. Overall, 37 student teachers volunteered to participate. Five students had to be excluded for personal or organizational reasons, and two students withdrew. The participants of the final sample (N=30) included 15 student teachers with a focus on preschool education and lower primary school (K-2) and 15 with a focus on upper primary education (3–6). Student teachers were, on average, 22.6 years old (SD=2.18; range=21-30). The distribution of female (90%) and male (10%) students corresponds to the high proportion of female students in preschool and primary school levels at the teacher education institute. All participants had given verbal full consent for a scientific use of their answers. Confidentiality of data were ensured. Participation was fully voluntary, and participants were given the opportunity to quit the interview at any time.

5.3 Data collection

Data collection was conducted during the 2016/2017 academic year at the University of Bern. Data were collected in November 2016 by the first author. Each interview lasted approximately 60 to 90 minutes and took place on the university campus.

Table 2: Semi-structured interview topics, guiding questions and examples of categories

Topics	Interview questions	Categories
Forms of cooperation (Little, 1990)	How did you work together during planning/ instruction/ reflection?	Storytelling and scanning for ideas, aid and assistance, sharing, joint work
Team teaching model		

(Baeten & Simons, 2014)	(See question on instruction above)	Observation model, coaching model, assistant teaching model, equal status model, sequential-, parallel- and station teaching, teaming model
Challenges of team teaching (Baeten & Simons, 2014) *Conflicts (Brody, 2012; Friedman et al., 2000; Putnam & Wilson, 1982)*	What were the challenges with peer cooperation during planning/ instruction/ reflection?	Personality differences, differences in personal goals and values, lack of compatibility, lack of flexibility, less individual teaching, increased workload, lack of clarity in terms of responsibilities, lack of feedback from mentor teachers, difficulty with peer feedback, challenges for school students
		Relationship, work style and communication conflicts

Data collection was performed using an in-depth, semi-structured individual interview (Table 2), which was conducted twice for each participant, for both TPM1 and TPM2 at the same interview meeting. The interview guide was pretested with two students. After the pretest interviews, minor modifications were made to the interview guide (e.g. the order of two interview questions was revised and individual questions were removed or added). Student teachers were asked to describe their experiences with paired field placements for each Teaching Practice Module 1 and 2. At the end of the interviews, all student teachers were invited to generally comment on the challenges during both teaching practice modules. Student teachers were invited to give multiple answers to each question.

5.4 Data analysis

Data were analysed using Mayring's (2010) approach of structuring qualitative content analysis by determining meaning units and categories referring to the research questions. The interview material was categorized using a deductive–inductive coding scheme to structure the content. The deductive coding scheme was developed for each research question by selecting the following categories derived from prior theory: (1) in order to cover the whole teaching process, we combined Little's (1990) four forms of cooperation that refer to the typical life of teachers in school with Baeten and Simons' (2014) five team teaching models that explicitly focus on cooperation during instruction (Table 4) for the analyses of student teacher cooperation in paired field placements; (2) the categories for the challenges of team teaching were derived from the extended categorization according to Baeten and Simons (2014) (Table 5); (3) finally, text segments were coded according to the use of proactive or reactive behavioural strategy, as identified by Putnam and Wilson (1982), Friedman et al. (2000) and Brody (2012). We sorted the challenges into three main types: *relationship, work style and communication conflicts*. Then, we differentiated between *proactive and reactive coping. Proactive strategies* aim to find a solution to the problem, engaging in activities for goal achievement/pursuit (Example: "She could have given me a little more sophisticated feedback ... I told her 'yeah, can you observe me a little bit better during my lesson?'" (ST_28)). *Reactive strategies* imply reduced efforts to deal with the stressor and use avoidance and distraction from active engagement to address the problem (Example: "Scheduling wasn't good because it was like 'you said you're going to take this (!) to our meeting and then it's not available' ... can't fully trust her to do her part" (ST_3)).

Table 3: Coding scheme for forms of peer cooperation according to Little (1990)

Category	Coding Method	Example
Storytelling and scanning for ideas	Students gain information through quick occasional exchanges of stories and experiences. Informal exchange takes place outside of active class hours	"So the train ride was kind of our time slot for exchange" (ST_6)
Aid and assistance	Students give each other advice or share ideas on specific teaching situations. Concrete assistance is given when explicitly requested	"If you had a problem, you asked the other for assistance" (ST_1)
Sharing	Students exchange materials, ideas, opinions or methods. Access to the material is granted, ideas and aspects of the work are revealed	"... we just stayed there after school and discussed ... we could help each other a lot" (ST_22)
Joint work	Students engage in joint work, share responsibility and goals. Students discuss different views and opinions through collective actions.	"When we practised team teaching, we planned together in detail from the very beginning" (ST_8)
New categories: *Arrangements and division into teaching lessons*	Students make arrangements and divide teaching lessons	"We have always arranged who is day-responsible or lesson-responsible" (ST_4)
Receiving feedback from mentor teachers	Students receive feedback from the mentor teacher	"We talked about it, lesson by lesson, and the mentor teacher gave feedback" (ST_5)

As can be

seen in Table 3, Little's (1990) work on coopeation refers predominantly to the description of general collaborations between teachers and does not cover all cooperation activities during field experiences. Accordingly, *feedback from mentor teachers* and *division of work and teaching* need to be added. Moreover, we complemented the coding scheme based on Little's (1990) with a specific focus on various forms of independent teaching (see Table 4) in the paired setting as introduced by Baeten and Simons (2014). Baeten and Simons' differentiation into forms of team teaching (2014) helped to specify and explain how the division of lessons has been practised and experienced by the student teachers. As a final step (Table 5), we applied the analysis of related challenges that were identified by Beaton and Simons (2014).

Table 4: Coding scheme for team teaching models according to Baeten and Simons (2014)

Category	Example
Observation model	"After the lesson observation we gave each other feedback" (ST_2)
Coaching model	" ... we also supported each other when it came to coaching" (ST_9)
Assistant teaching model	"One person was responsible and the other assisted" (ST_28)
Equal status model	

- *Sequential teaching*	"She read the story to the children and then I took over" (ST_25)
- *Parallel teaching*	"We had two classes and everyone taught their class with the same content" (ST_8)
- *Station teaching*	"We were working on the theme 'air' and we had 27 different stations" (ST_9)
Teaming model	" ... we also did team teaching together, planning a whole lesson, teaching and giving each other feedback later" (ST_17)

Table 5: Coding scheme for challenges related to Baeten and Simons (2014)

Field of challenges	Main categories	Subcategories	Examples
Relationship conflict	*Personality differences*	- Disagreement	"We didn't get along, we saw each other as rivals. I'm more of a lone wolf" (ST_13)
	Differences in personal goals and values	- Insists on own opinion	" ... she wanted to do it her way" (ST_1)
Work style conflicts	*Lack of compatibility*	- Different perceptions and ideas	"Both have completely different ideas" (ST_2).
		- Different working styles	"She has a different work rhythm, which was difficult!" (ST_12)
		- Mismatch of individual teaching styles	" ... different types of teaching, someone wants more group work and the other doesn't mind" (ST_11)
	Lack of flexibility		" ... I had to stick to the agreement we previously made" (ST_5)
Communication conflicts	*Lack of clarity regarding responsibilities*		" ... not quite clear who's really in charge now" (ST_20)
	Lack of feedback from mentor teachers	- Feedback from mentor teachers more valued	" ... feedback from the mentor teacher is just more important to me" (ST_12)
	Difficulty with peer feedback	- Destructive feedback	" ... feedback she gave me was like 'that wasn't good, you have to do it in a different way'" (ST_1)
		- Incapable of criticism	"She could not handle my feedback" (ST_22)
	Increased workload	- Time-consuming	"The same thing is discussed three or four times" (ST_10)
		- Organizational issues	"The practicum location was too far away to meet before classes started" (ST_7)
	Less individual teaching		" ... it's rather unusual that you teach together" (ST_14)
	Challenges for school students		" ... it's a little bit confusing for the smaller children when they have multiple teachers in class" (ST_6)

The coding scheme was developed including definitions, anchor examples and coding rules for the main categories and subcategories (Mayring, 2010). Anchor examples for each category were extracted from the

interviews (see Table 3). Additional subcategories were developed and inductively added when student teachers stated a challenge not mentioned in the previously discussed literature. The coding unit was the answer to the question, i.e. as smallest component a single word, for example, the answer "division" as response to the question of team teaching practices. The category system was applied using data analysis software MAXQDA 18. All interviews were coded by the first author and two independent co-raters each coded half of the interviews. Intercoder reliability was tested by comparing the results of the initial rating by the first author with one of the other two raters. The corrected Cohen's kappa coefficients (Brennan & Prediger, 1981) indicate an interrater reliability of high agreement. Kappa values range from 0.73 to 1.00 (see Appendix Table A1, A2 and A3). Additionally, we defined an illustrative case to offer an exploratory view of how student teachers coped with the challenges during the process of team teaching.

6 Results

6.1 RQ1: Which forms of peer cooperation *do student teachers describe during* different phases of team teaching (planning, instruction, reflection) in paired field placements?

The first analysis of forms of team teaching was based on Little's (1990) approach. In addition to Little's four main categories – (1) storytelling and scanning for ideas, (2) aid and assistance, (3) sharing and (4) joint work – two more categories emerged from the data: (5) agreements and division of lessons that were related to planning and instruction and (6) receiving feedback from mentor teachers that was reported for the reflection phase (Table 6).

Table 6: Overview of forms of peer cooperation (according to Little, 1990)

Category	Planning		Instruction		Reflection	
	Codes count TPM1/TPMP2	Percentage TPM1/TPMP2	Codes count TPM1/TPMP2	Percentage TPM1/TPMP2	Codes count TPM1/TPMP2	Percentage TPM1/TPMP2
Storytelling and scanning for ideas	18/6	21%/9%	-/-	-/-	10/16	12%/30%
Aid and assistance	22/9	25%/14%	21/24	39%/35%	26/9	30%/17%
Sharing	17/19	20%/29%	-/-	-/-	16/6	19%/11%
Joint work	11/10	12%/15%	-/-	-/-	13/8	15%/15%
Agreements and division of lessons	19/22	22%/33%	33/45	61%/65%	-/-	-/-
Receiving feedback from mentor teachers	-/-	-/-	-/-	-/-	21/15	24%/28%
Total N TPM1/TPM2	87/66		54/69		86/54	

Note: TPM1=results regarding Teaching Practice Module 1; TPM2=results regarding Teaching Practice Module 2
Calculation of the percentage: The total number of codes was divided by the number of responses for each phase of cooperation.

6.1.1 Planning

Agreements and divisions of lessons were described during both TPM (TPM1: 22%; TPM2: 33%), for example: "The division was actually quite simple: we determined who would teach which part of the lessons, do the introduction or sometimes we divided whole days" (ST_13). Student teachers mentioned *aid and assistance* as being provided through *giving advice or sharing ideas on specific situations* (TPM1: 16%; TPM2: 2%) and *concrete assistance when asked* (TPM1: 9%; TPM2: 12%): "If you had a problem, you asked the other, you could get a little help" (ST_6). S*torytelling and scanning for ideas* (TPM1: 21%; TPM2: 9%) included two categories *informal exchange* (TPM1: 15%; TPM2: 5%) and *exchange of ideas* (TPM1: 6%;

TPM2: 3%): "We shared ideas on how to stimulate lessons to keep children attentive." (ST_3). The practices of cooperation that Little (1990) defined as *sharing* (share responsibilities and goals, discussions about different views and opinions and provide feedback) were reported for both TPMs (TPM1: 20%; TPM2: 29%). *Sharing* included two categories as well (*exchange of opinions and methods; exchange of material and ideas*). "We always set up a basic concept and shared our ideas with each other, like 'did you find out something about that, too? How are we going to do this?' ..." (ST_9). *Joint work* was rarely reported (TPM1: 12%; TPM2: 15%). In summary, the results revealed that cooperation during planning was primarily focused on division of work. As a notable difference, student teachers described *agreements and division* more frequently in TPM2 than in TPM1 (TPM1: 22%; TPM2: 33%).

6.1.2 Instruction

A respectable number of answers aligned with the forms of peer cooperation according to Little (1990) during both TPMs (TPM1: 54 responses; TPM2: 69 responses), however only two forms could be identified. The majority of codes related to the category *Agreements and division of lessons* (TPM1: 61%; TPM2: 65%) and *aid and assistance* (TPM1: 39%; TPM2: 35%), which included two subcategories, *concrete assistance when asked* (TPM1: 28%; TPM2: 29%) and *give advice/share ideas on specific situations* (TPM1: 11%; TPM2: 6%).

Student teachers often described divided lessons for separate instruction, and no extensive form of peer cooperation, as defined by Little (1990), could be identified. However, our data showed various forms of peer cooperation during instruction, and thus the analysis of the instruction, according to Little's forms of cooperation, left a number of answers uncoded. The specific focus on the three phases of teaching (planning, instruction, reflection) revealed additional forms of cooperation that were specifically practised during instruction. We therefore augmented the analysis with the team teaching forms of Baeten and Simons (2014), which explicitly focus on cooperation during instruction in field placements and help to better more clearly explain how division of lessons has been implemented. A total of 54 (TPM1) and 69 (TPM2) responses were coded. According to the multiple response format, the analysis revealed that student teachers described, on average, two different forms of team teaching that they used during instruction (Table 7).

Table 7: Forms of team teaching during *instruction* (according to Baeten & Simons, 2014)

Category	Instruction	
	Codes Count TPM1/TPM2	Percentage TPM1/TPM2
Team teaching models		
Observation model	3/2	5%/3%
Coaching model	1/1	2%/1%
Assistant teaching model	22/18	39%/25%
Equal status model	23/38	41%/53%
- Parallel teaching	3/3	5%/4%
- Sequential teaching	19/31	34%/43%
- Station teaching	1/4	2%/6%
Teaming model	4/5	7%/7%
Individual teaching	3/8	6%/11%
Total	56/72	

Note: TPM1=results regarding Teaching Practice Module 1; TPM2=results regarding Teaching Practice Module2.

The most frequently reported team teaching model according to Baeten and Simons (2014) was the *Equal Status Model* and its variations (TPM1: 41%; TPM2: 53%). *Sequential Teaching* as one of the three subforms of the Equal Status Model (parallel, sequential and station teaching) was selected as a favourite teaching strategy for peer cooperation (TPM1: 34%; TPM2: 43%). More than two out of three student teachers reported using sequential teaching during the two TPMs: "We divide subjects and classes ... for example, now Ms. A. does this with you and then Ms. W. does this with you". I can still remember a music lesson where we rehearsed a dance with the class. I started by demonstrating and then she demonstrated more moves" (ST_3). Student teachers also described cooperative practices as equal partners: "One was always in charge during their sequences but both had joint responsibility ... we agreed when we would do what" (ST_2). The second most preferred team teaching model was the *Assistant Teaching Model* (TPM1: 39%; TPM2: 25%): "During the circle the one who was not teaching took a seat in the circle and intervened, or helped some children depending on their behaviour" (ST_20). Student teachers reported poor use of the *Parallel* and *Station Teaching* (TPM1: 2%; TPM2: 6%).

6.1.3 Reflection

Reflection in TPM1 showed that the majority of student teachers primarily mentioned *aid and assistance* (TPM1: 30%; TPM2: 17%) and *storytelling and scanning for ideas* in TPM2 (TPM1: 12%; TPM2: 30%). *Aid and assistance* was given through *feedback/exchange about instruction*: "We undertook reflection either at noon or in the afternoon. We just discussed in general what we had observed about teaching, what we had noticed" (ST_29). *Receiving feedback from mentor teachers* was the second most frequent form for both TPMs (TPM1: 24%; TPM2: 28%). Notably, student teachers reported that reflection was often guided or initiated by the mentor teachers: "We actually didn't do a lot of reflection. More with the mentor teacher. Just in a threesome combination. But usually the mentor teacher did the reflection" (ST_10).

6.2 RQ2: What challenges of peer cooperation during different phases of team teaching (planning, instruction, reflection) in paired field placements did student teachers report?

As has been shown, the three different phases of team teaching are associated with various forms of peer cooperation, with a majority of divided and rather independent teaching practices during instruction. Accordingly, we categorized the challenges that student teachers reported according to these three phases. Table 8 shows that student teachers most frequently reported challenging experiences during instruction (n=76), followed by planning (n=65) and fewer experiences during reflection (n=36).

Table 8: Challenges of peer cooperation (extended categorization according to Baeten & Simons, 2014)

Field of challenges	Planning (n=65)	Instruction (n=76)	Reflection (n=36)
Relationship conflicts (31%/11%/8%)	- Personality differences (10%)	- Personality differences (4%)	- Personality differences (5%)
	- Differences in personal goals and values (21%)	- Differences in personal goals and values (7%)	- Differences in personal goals and values (3%)
Work style conflicts (35%/47%/-)	- Different perceptions and ideas (16%) - Different working styles (11%)	- Mismatch of individual teaching styles (16%)	
	- Lack of flexibility (8%)	- Lack of flexibility (26%)	

		- Less individual teaching (5%)	
Increased workload (43%/-/42%)	- Time-consuming (29%) - Organizational issues (5%)		- Time-consuming (42%)
Communication conflicts (-/28%/50%)		- Lack of clarity with regard to responsibilities (28%)	
			- Lack of feedback from mentor teachers (17%)
			- Destructive feedback (14%) - Incapable of criticism (19%)
		- Challenges for school Students (14%)	

Note: Whereas the interview question regarding experiences with peer cooperation (RQ1) was separated for the two practice phases (TPM1, TPM2), the interview question regarding the challenges of peer cooperation addressed challenges during the three phases of team teaching in general. The results thus include TPM1 and TPM2.

6.2.1 Planning

The primary challenges were due *to increased workload* (43%), *work style conflict* (35%) *and relationship conflicts* (31%). Issues considered frequently were *differences in personal goals and values* (21%) and *personality differences* (10%): "She didn't want to accept any other opinions. We couldn't find a common solution" (ST_22). *Lack of compatibility* became evident through differences in perceptions and ideas (16%), as well as working styles (11%): "Both of us have completely different ideas during the preparation, actually different preparation strategies, too" (ST_2). Student teachers also expressed displeasure about the *lack of flexibility* when forced to follow agreements (8%).

6.2.2 Instruction

Most of the conflicts during instruction could be categorized into two field of challenges: *work style* conflicts (47%) and *communication conflicts* (28%). The most commonly cited challenge in cooperation was *lack of clarity regarding responsibilities* (28%): "When we taught together it was maybe a little bit difficult as to who was speaking now in class" (ST_19). Also, challenges regarding *lack of flexibility* (26%) were mentioned due to pressure to adhere to pre-agreements: "We don't get along very well. We kind of agreed who's in charge but still I would like to express my opinion. But I had to stick to the agreement we made before" (ST_22). An additional 14% of the challenges were related to school students, as unclear teacher roles led to confusion among school students: "When you have different teachers, it is always difficult for the kids, like 'what am I not allowed to do in this class again?' ..." (ST_6). A small number of student teachers indicated that their partner *insisted on their own opinion* during the instruction (7%).

6.2.3 Reflection

Along with *increased workload (*42%) and, in particular, time-related issues (e.g. "sometimes the same thing is discussed three or four times, which can be exhausting" (ST_11)), issues during reflection most often concerned *communication conflicts* (50%). Student teachers did not feel comfortable giving peer feedback, believing that not all peers are able to handle criticism (19%) (e.g. "cannot accept the criticism or take it positively" (ST_22)) and 14% had to deal with *destructive feedback*. A lack of feedback from mentor teachers was seen as a challenge (17%), for example, "a mentor teacher can draw on their experience" (ST_3).

In sum, most of the challenges of peer cooperation were experienced during instruction (76 codes), whereas reflection was perceived to be the least challenging (36 codes). However, challenges did already arise in the earliest stage of peer cooperation, as the second most frequent challenges (65 codes) were reported during planning. This finding points to the importance of the quality of peer cooperation during lesson preparation. Based on Putnam and Wilson's (1982), Friedman et al.'s (2000) and Brody's (2012) field of challenges, *increased workload* and *work style conflicts* were most frequently reported. In particular, we found that the three different phases differed not only regarding challenge frequency but also challenge categories. Planning proved to be especially difficult due to increased workload (43%), work style conflicts (35%) and relationship conflicts (31%). Instruction was difficult due to work style conflicts (47%) and communication conflicts (28%), whereas reflection was difficult due to communication conflicts (50%) and workload (42%). Given that the predominant form of peer cooperation was division of work and rather independent teaching, such as assistant teaching and equal status, the question of how student teachers cope with these conflicts seems to necessitate closer attention.

6.3 RQ3: How do student teachers cope with peer cooperation challenges during different phases of team teaching (planning, instruction, reflection) in paired field placements?

In the next step, we aligned the challenges that individual student teachers reported in the three phases of team teaching with their use of coping strategies. We focused this analysis on the three challenges that are related to peer interaction, i.e. relationship conflicts, work style conflicts and communication conflicts. As seen in Table 9, in coping with the perceived challenges, student teachers reported the use of more reactive than proactive coping strategies.

Table 9: Overview of the frequency of challenges and coping strategies by team teaching phases by student teachers

	Challenges	Coping strategy	
Planning	Relationship conflicts (3)	Reactive (2)	Proactive (1)
	Work style conflicts (12)	Reactive (8)	Proactive (4)
	Communication conflicts (5)	Reactive (5)	Proactive (0)
Instruction	Relationship conflicts (2)	Reactive (0)	Proactive (2)
	Work style conflicts (10)	Reactive (7)	Proactive (3)
	Communication conflicts (4)	Reactive (1)	Proactive (3)
Reflection	Relationship conflicts (5)	Reactive (3)	Proactive (2)
	Communication conflicts (2)	Reactive (1)	Proactive (1)

(n) total numbers of student teachers.

Note: Overall numbers of challenges do not add up to 30 student teachers because not all challenges were encountered by each student teacher. In particular, in case of a lack of cooperation, no challenges were mentioned.

In order to better understand how student teachers cope with peer cooperation challenges, we selected two illustrative cases that included both reactive and proactive coping strategies. Tom predominantly uses reactive coping strategies (Table 10), whereas Luisa uses both reactive and proactive coping strategies to manage challenges (Table 11). These two cases, Tom and Luisa, were also selected because both reported challenges that occur in all three phases of cooperation. Thus, both illustrative cases serve as examples of forms of cooperation and challenges in paired field placements and how student teachers tried to solve conflicts.

6.3.1 Tom

Tom's case study shows how students deal with challenges when they use reactive strategies in all three phases of collaboration.

Table 10: Overview of case study Tom

Tom's Case	Form of cooperation	Challenges	Coping strategy
Planning	Division of labour	- Relationship conflicts - Work style conflicts - Communication conflicts	Reactive
Instruction	Sequential teaching	- Relationship conflicts	Reactive
Reflection	Separate reflection	- Relationship conflicts	Reactive

Planning: Work style conflict and lack of communication triggered subsequent relationship conflict

During planning, both student teachers divided the tasks. However, even the division of labour and the separate work led to conflicts due to perceived unfair division and different working styles and outcomes.

First, the relationship was described as positive, but peer cooperation continually worsened. According to Tom, each person had a sense of accomplishing more than their peer. Unequal contributions and efforts led to tensions. Tom described conflicts that arose due to different preferences about how to accomplish tasks.

> I did a lot and somehow nothing came from the other person. I'm more of a person who waits first and then takes it into my own hands. I've prepared so many things, but she still considered the situation to be unfair. And I thought to myself once again: "I have already done everything". That somehow created an uneasy feeling between us.

To avoid further conflicts, Tom decided to do the preparation alone. He informed his partner but did not ask for her consent. However, he had doubts about the unequal division of work and the contributions. He was unsatisfied with the team outcome and expressed his frustration. His discomfort with having done the tasks alone contradicted his free decision to do it this way. Disagreements about duties were not openly discussed. The biggest challenge was thus perceived and termed as "sacrifice".

> The biggest challenge was somehow the "sacrifice". I may exaggerate from time to time, but with her it was perhaps almost the complete opposite. I tried to make stamps with natural materials for a whole day. And she was around for just about half an hour and then said, "I have to leave. I'm stressed." But she often feels like I am doing less. Afterwards I thought to myself, can''t we just take a little time for things somehow?

Task conflict and a lack of communication triggered relationship conflict. The applied strategy of separating work instead of using peer cooperation led to an unequal distribution of work and responsibilities, which in turn intensified tensions and feelings of annoyance for both student teachers. These tensions meant that student teachers stopped collaboration during planning.

Instruction: Harmonic instruction due to independent work but fragile relationship

One might expect the misfit between Tom and his partner to continue during the process of team teaching. Surprisingly, it was found that despite the challenges during the planning, the instruction proceeded harmoniously. A deeper look into the process, however, shows that this harmony was based on collective disconnectedness.

> During the instruction we got along with each other. We focused on the lessons and we appreciated each other in this respect. We actually shared things quite often. So, she did her lessons and I did mine. The "lead function" was so important. We wanted to do it that way – "that's your work somehow and you decide what's going to be done here."' On this level, it worked.

The student teachers focused on different lessons during instruction. When each person was able to perform their tasks independently, the cooperation worked properly. Tom therefore emphasized the importance of the leadership function. A clear allocation of tasks made the peer cooperation work. Conflicts arose in other situations, however. Grading situations and contact with mentor teachers were identified as moments of stress and harmful for peer cooperation.

> I noticed that and told her, "whenever there were moments of stress, we always had this problem". So, especially during exams or when something was being graded or when the teachers came over for lessons.

Reflection: Reduced tensions when mentor teachers involved but fragile relationship

As the reflection was primarily guided by the mentor teacher, this phase turned out to be less conflictual between the student teachers.

> Reflection was always quite important. The person who hadn't taught sat with the teacher at a table at the back of the classroom. Once, my partner expressed her displeasure. She felt that it was not acceptable that the teacher and I had whispered during her lesson. She always felt extremely attacked because she always thought it was about her.

The clear structure of separate reflection reduced conflict between the student teachers but no peer cooperation developed. The vulnerability of the relationship became clear in situations of contact with the mentor teacher and impeded the relationship.

6.3.2 Luisa

In Luisa's case study, exchange was practised among the student teachers during planning and reflection. However, this exchange revealed several conflicts and reactive and proactive coping strategies are used to deal with these challenges.

Table 11: Overview of case study Luisa

Luisa's Case	Form of cooperation	Challenges	Coping strategy
Planning	Exchange of ideas	- Relationship conflicts - Work style conflicts - Communication conflicts	Reactive
Instruction	Sequential teaching	- Relationship conflicts - Communication conflicts	Reactive
Reflection	Exchange of feedback	- Communication conflicts	Proactive

Planning: Work style conflicts led to relational and communication challenges

Luisa reported work style conflicts during planning, as the student teachers had different preferences on how to accomplish tasks. The mismatch of behaviour led to tensions.

> Sometimes she made suggestions which I didn't agree with. After that, it was difficult to somehow find a balance. She was very stubborn and wanted to do her own thing. When we had actually agreed on something, she wanted to change it again and came up with "we could do it another way".

As conflicts increased, Luisa stopped addressing disagreements with her partner. She felt that discussing issues would create more issues and may even escalate things. Accordingly, communication between the student teachers worsened. Occasionally, Luisa reported these challenges to the mentor teacher, who in turn addressed the issues. Although Luisa was annoyed as she had to deal with her partner's difficult work style, she valued her partner's contribution to the planning, while emphasizing the differences between them.

> She contributed to the planning, she looked for a lot of ideas and was able to come up with some new ideas as well. But she had difficulty taking my ideas into account and accepting feedback or criticism. So, we didn't always enjoy each other's company because we were not always able to deal with each other's ideas.

After unsuccessful trials in finding shared solutions during planning, Luisa tended to reduce peer cooperation due to different work styles. Interestingly, she continued with common preparation, although the work style differences remained unresolved. This had a negative impact on her morale and cooperation behaviour.

Instruction: Increased relational issues and lack of communication

The conflicts due to the different work behaviour that Luisa mentioned during planning continued during work in the classroom.

> The few lessons we tried to teach together were a little more difficult because we didn't want to tell each other what to do in class. We were in the forest and I had the lead. I set a limit of the field. She went out beyond that limit with a small group of school students. It was difficult to address it in any meaningful manner. When I set boundaries, I want her to accept them, too!

Luisa is unable to react properly when the school students overstep the boundary with her partner. She does not want to embarrass her partner in front of the school students. As a consequence, she cannot explain to the school students why their behaviour was inappropriate. Luisa is annoyed because she expects both the school students and her partner to follow her rules.

Despite problems, Luisa aimed to benefit from the paired placement as she tried to learn from the mistakes of her partner. Keen to improve her own teaching, she adopted her partner as a negative role model. Luisa concluded that they were able to benefit from each other, but also that her partner gained more value from their teamwork than she did.

> As a result, I learned what I should not do! I rather learned from her mistakes. She couldn't handle any interruptions, she needed a lot of intervention signs – such as the "silence" – sign introduced in this class to manage the classroom, which then also lowered the effect of these signs.

Reflection: Challenges in communication lead to poor reflection quality

Luisa stated that the reflection was relatively poor due to the lack of exchange and communication. She was afraid that she might trigger negative reactions from her partner by providing feedback. Her attempts to provide supportive feedback and to offer suggestions for improvement were not valued by her partner:

> Also, I tried to phrase negative feedback in such a way that it doesn't sound merely bad, more like suggestions about how she might do better.

Her attempt to cope with the difficulties by preventing negative feedback resulted in an uneasiness about not being honest. She regrets that neither student could adequately benefit from peer cooperation during reflection and that the lack of communication also impeded further cooperation.

> The reflection was rather poor, simply because our exchange was not good. Because we couldn't talk to each other on a productive level. I wish we had had better communication and that we could both provide each other with good criticism and constructive feedback. That's why we couldn't collect any good ideas for our further cooperation.

Peer cooperation in the reflection phase was nearly impossible due to the ongoing problems with communication. Although Luisa applied a proactive coping strategy by providing supportive feedback, peer cooperation remained difficult due to communication problems.

7. Discussion and conclusion

This study aimed for a better understanding of the peer cooperation challenges that student teachers encounter in different phases of team teaching during paired field placements and of the coping strategies that student teachers apply to manage these challenges. First, we identified which forms of team teaching were used during different phases of team teaching (planning, instruction, reflection) in paired field placements (RQ1). Based on Little's (1990) framework of teacher collaboration and Beaten and Simons' (2014) work on team teaching, the results revealed that *agreements and division into lessons* were frequently used during *planning*. Student teachers made arrangements to divide lessons with the aim of elevating opportunities for individual teaching. The findings show that cooperative placements were spontaneously redesigned into individual forms, as the planning of sequential teaching is a method well suited to preparing and teaching separately, while other forms of team teaching would require more cooperation. Reasons might involve poor instruction and support for cooperative planning, as well as a lack of role models in schools and universities (Le et al., 2018). Future research could investigate whether peer cooperation during planning could be fostered through extra time and specific cooperative tasks. There is evidence that peer cooperation can benefit from mentored sessions that focus on student teacher cooperation during field placements (e.g. Gardiner & Robinson, 2009; Goodnough et al., 2009; Walsh & Elmslie, 2005).

Based on the team teaching models of Baeten and Simons (2014), the findings showed that student teachers most frequently used the *Equal Status Model* and, particularly, *Sequential Teaching,* followed by the *Assistant*

Teaching Model during the instruction phase. The results repeat the findings from the planning phase, such that student teachers focus primarily on individual teaching by dividing lessons. These more separate models of teaching would also need high-quality peer cooperation, however. For example, the specific tasks related to the schedule and forms of support need to be discussed regarding the role of an assistant. If an assistant is supposed to take an active role, the person who is responsible for the lesson must explicitly include those phases. The frequent use of the *Equal Status Model* during both teaching practice modules also reflects how student teachers perceived themselves during field placements. Even if they might have differed in individual competences, they saw themselves as equal in the course of their training. This begs the question of whether peer cooperation needs closer supervision and instruction, which could be given through models of peer mentoring, such as within the content-focused peer-coaching model (Becker et al., 2019; Kreis, 2019).

The desire to work alone during the paired field placement was also mirrored in the reflection phase. The opportunity to seek help from each other and the feedback they provided were only marginally addressed during the reflection. Giving the important role that feedback has for the learning process (Dee, 2012), this suggests the necessity of introducing student teachers and mentor teachers to models of professional peer feedback (Wynn & Kromrey, 2000). The findings also imply that student teachers might not sufficiently consider the reflection phase as a learning opportunity for cooperative lesson preparation, although Baeten and Simons (2014) found that students can benefit from team teaching through increased dialogue, which implies reciprocal exchanges.

Second, this study sought to identify challenges of peer cooperation with a specific link to the three different phases of team teaching (RQ2). The findings of this study confirmed challenges that align with disadvantages, as reported by Baeten and Simons (2014). Baeten and Simons (2014), however, did not cover all phases of cooperation in their studies. Team teaching was thus only partially mapped, because cooperation can occur during planning, instruction and reflection. Accordingly, we identified additional challenges, some of which were specifically linked to phases of team teaching (e.g. the pressure to follow agreements during planning and instruction). Relationship conflicts occurred more frequently during lesson planning and the majority of challenges related to a *lack of compatibility* between the team teaching partners during planning and instruction. Diverse working styles, as well as personal disagreement and misfits, caused problems. This lack of compatibility between cooperation partners has already been discussed in the literature (e.g. Goodnough et al., 2009; Kamens, 2007). The results confirm the finding by Nokes et al. (2008), that student teachers faced moments of tension when personalities or philosophies of teaching did not match. Challenges seemed to occur early, when individuals had different expectations of planning and work contributions, and failed to communicate. Surprisingly, communication issues were not explicitly mentioned as a challenge by student teachers, although it affected the planning process.

The results revealed that paired field placements often resulted in divided instead of cooperative lessons. Along with a lack of compatibility, student teachers reported that the increased workload caused by peer cooperation hampered peer cooperation. Similar to research that found workload to be a relevant obstacle to teacher cooperation (Parsons & Stephenson, 2005), student teachers seemed to avoid this extra time and effort for mutual exchange. Student teachers tended to use sequential teaching, as they felt displeasure when forced to follow agreements during planning and instruction. This challenge could add new information to the existing knowledge about disadvantages of student teacher team teaching as outlined by Baeten and Simons (2014) and the difficulties of teacher cooperation (de Jong et al., 2019). Further research is necessary, however, to identify the role that this challenge could play in impeding cooperation. Another challenge was related to the confusion of school students due to unclear teacher roles and responsibilities during planning and instruction, which might have had negative effects on their learning. In line with previous research (Baeten & Simons, 2016; Goodnough et al., 2009), the results confirm confusion and unclear roles as key disadvantages of team teaching (Schmulian & Coetzee, 2019).

The results also showed that challenges were not only relevant within a team teaching phase, but that negative effects of phases could be intertwined. This was specifically evident for challenges in planning or instruction, which affected peer cooperation in the subsequent phases. Limited time and a lack of support for cooperative planning were revealed as a burden for cooperative teaching and reflection. If the planning phase allowed student teachers to work separately, opportunities for common teaching and reflection decreased. Even when they shared a teaching lesson, they preferred to work individually and waived the opportunity for cooperative reflection. As the opportunity for reflection with the team teaching partner was, more generally, marginally used during the paired field placements, the results could be seen as demonstrating a need for better mentoring as regards the student teacher peer exchange and cooperative reflection. Specific forms of mentoring, such as reflective teaching (Zeichner, 1981), or models for providing professional conversations such as improvement-focused feedback (Timperley, 2015) could help to support student teacher peer cooperation during reflection.

Third, this study found that student teachers tend to use more reactive than proactive coping strategies in all three phases of team teaching. Based on two case studies, it illustrated how student teachers coped with challenges across different phases of team teaching (RQ3). Both cases showed predominantly reactive coping strategies that were applied to a number of challenges that had already emerged during the planning phase. Similarly to the study by Heikonen et al. (2017), who found reactive coping strategies to be prevalent for student teachers coping with difficult interactions during classroom management, the challenges of peer cooperation were answered after the event had already occurred and the conflicts had developed. Case 1 (Tom) showed work style challenges that subsequently triggered relationship conflicts. Case 2 (Luisa) is an illustration of problem avoidance, which led to conflicts including work-related and interpersonal issues. Both cases also offered new insights into the coping strategies used by student teachers and added information to the theories of cooperative teacher behaviour. When student teachers had negative experiences of peer cooperation during planning, they implemented an avoidance behaviour, particularly in the division of lessons. This division of lessons was directly or indirectly supported by the mentor teachers. According to Baeten and Simons (2014), the division of lessons used with sequential, station, or parallel teaching is regarded as a highly cooperative form of team teaching. In our study, however, these forms of team teaching were applied in order to avoid peer cooperation. This suggests a need to consider not only the instruction phase but also the planning and reflection phases when defining and evaluating teaching behaviour as cooperative.

Team teaching provides an opportunity for dynamic exchange with peers, cooperatively overcoming challenges and embracing Vygotsky's (1978) notion that learning is a social activity. This might be a big challenge for student teachers. Interestingly, we also found that difficulties could arise when student teachers avoided peer cooperation by preparing and teaching lessons individually. Studies have shown that mentor teachers were needed by student teachers to act as mediators when problems arose. For example, mentor teacher support encouraged student teacher reflections on disagreement (e.g. Nokes et al., 2008). As successful cooperation requires a positive atmosphere and a good relationship (Gardiner & Robinson, 2011), as well as high-quality communication (Gillies, 2004), student teachers and mentor teachers should be specifically prepared for cooperation (Baeten & Simons, 2014). The results of this study also indicated that student teachers were uncertain about how to respond to or tackle difficulties with peer cooperation, and thus imply that student teachers need to be guided to become aware of potential proactive strategies to regulate challenges they face during peer cooperation. This finding mirrors previous studies that reported that student teachers have limited cooperative skills to cope with challenges (Heikonen et al., 2017). It would be interesting to explore how to improve the quality of support seminars and reflection during paired field placements with the mentor teacher. Future studies should also further examine how teacher education can support student teachers' personal development to avoid conflicts based on, for example, different values or beliefs (see Meijer et al., 2009).

8. Practical implications for teacher education

This study confirms that, although paired field placements provide "... a structure for collaboration, the structure alone does not guarantee that successful collaboration will occur" (Gardiner & Robinson, 2011, p. 10). These findings have the following practical implications:

- *Emphasizing the learning potential of paired field placements.* The pairing is an opportunity to share competencies. The learning potential of team teaching should be explicitly explained to student teachers to highlight its benefits in fostering positive attitudes towards cooperation. A positive attitude toward cooperation could encourage student teachers.

- *Fostering the student teacher relationship/team-building process.* The results suggest a need to promote the relationship between students in the early stages of paired field placements. Opportunities for first contacts and mutual exchange should be created prior to the start of the placement. Moreover, communication among all partners in all stages of paired field placements should be encouraged.

- *Providing organizational support with time allocation/management.* The administration may provide support by aligning student teachers' schedules for cooperation *before* and during the practicum, resolving time-related issues by allocating time for team meetings. Mentor teachers can also help by scheduling opportunities to plan and reflect on lessons after instruction. Meetings should take place on a regular basis, at regular times and places, in order to routinize joint planning, reflection and feedback discussions.

- *Promoting student teacher social skills through specific training.* Student teachers should be explicitly trained with regard to their cooperation skills in courses to maintain a positive relationship through frequent reflective discussions (e.g. providing constructive feedback, establishing concrete agreements, or coordinating cooperation). Student teachers also need to be guided to become aware of strategies to manage difficulties and to resolve conflicts constructively during paired field placements.

- *Promoting specific training for mentor teachers and university teachers.* Mentor teachers and university teachers who guide paired field placements play an important role, particularly in the case of disagreements and conflicts. Teacher education should prepare mentor teachers and university teachers for their guiding role in promoting communication and cooperation within student teacher pairs.

9. Limitations

This study has several limitations. First, it investigated only a small number of participants from one teacher education programme and the results are not representative of other teacher education contexts. As teacher education in Switzerland varies across states, the results cannot be translated to other states. Second, although the study aimed for an understanding of the student teacher perspective, only a one-sided view of peer cooperation in a tandem practicum could be investigated. Subsequent studies will try to mirror both sides of the peer duo in order to uncover the full picture of cooperation. Third, the results must be rated as exploratory in nature. The specific features of a teacher education programme, such as the form of preparing and mentoring paired field placements, needs more detailed consideration. Fourth, we identified a limited set of coping strategies. Future research should investigate a greater variety of coping strategies. Fifth, although we could identify various forms of peer cooperation according to three phases of team teaching (planning, instruction, reflection), it was not possible to associate specific challenges with the various forms of team teaching due to the high dominance of individual teaching by dividing lessons. It would be interesting to know whether more advanced forms of peer cooperation, such as the teaming model, differ in terms of challenges. This question calls for quasi-experimental research that aims to compare different forms of peer cooperation. Also, longitudinal research with other groups of student teachers in other paired field placements would be welcome. More generally, longitudinal research could help to deepen our understanding of student teacher challenges. Such insights could be of great value for teacher education, to improve cooperative field placements.

Keypoints

- Student teachers most frequently used division of work and sequential teaching
- Results reveal various forms of conflicts during different phases of peer cooperation (planning, instruction, reflection)
- The most challenging part of peer cooperation is experienced during instruction with lack of compatibility with the peer
- Student teachers tend to use reactive coping strategies in response to challenges
- The potential of paired field placements as learning opportunities for cooperation skills is undermined by division of work

Appendix 1: Corrected Cohen's kappa coefficients, forms of cooperation

Table A1

	Little's form of cooperation (1990)		Cooperation during instruction according to Baeten and Simons (2014)		Challenges of team teaching related to Baeten and Simons (2014)	
	Co-Rater 1	Co-Rater 2	Co-Rater 1	Co-Rater 2	Co-Rater 1	Co-Rater 2
Planning	0.80	0.89	-	-	0.86	0.86
Instruction	0.79	0.83	0.82	0.87	0.86	0.86
Reflection	0.75	0.81	-	-	0.98	0.91

Appendix 2: Corrected Cohen's kappa coefficients, challenges

Table A2

Challenges	Relationship conflicts		Work style conflicts		Communication conflicts	
	Co-Rater 1	Co-Rater 2	Co-Rater 1	Co-Rater 2	Co-Rater 1	Co-Rater 2
Planning	0.82	0.88	0.93	0.91	0.84	0.82
Instruction	0.91	0.94	0.90	0.89	0.82	0.80
Reflection	0.79	0.81	-	-	0.87	0.86

Appendix 3: Corrected Cohen's kappa coefficients, coping strategy

Table A3

Coping Strategy		Reactive Co-Rater 1	Reactive Co-Rater 2	Proactive Co-Rater 1	Proactive Co-Rater 2
Planning	Relationship conflicts	0.96	0.98	1.00	1.00
	Work style conflicts	0.85	0.80	0.75	0.80
	Communication conflicts	0.80	0.79	1.00	1.00
Instruction	Relationship conflicts	1.00	1.00	0.96	0.98
	Work style conflicts	0.83	0.86	0.80	0.78
	Communication conflicts	0.78	0.73	0.79	0.80
Reflection	Relationship conflicts	0.92	0.89	1.00	0.98
	Work style conflicts	-	-	-	-
	Communication conflicts	0.98	1.00	1.00	1.00

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