

Innovative Field Experiences in Teacher Education: Student-Teachers and Mentors as Partners in Teaching

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This study investigates team teaching between student teachers and mentors during student teachers' field experiences. A systematic literature search was conducted, which resulted into a narrative review. Three team teaching models could be distinguished: (1) the co-planning and co-evaluation model, (2) the assistant teaching model, and (3) the teaming model. Implementing these models during student teachers' field experiences shows benefits for student teachers (e.g., support and professional and personal growth), mentors (e.g., professional and personal growth), and learners in the classroom (e.g., few disciplinary problems and a wide variety of teaching styles). However, disadvantages were found as well. Finally, suggestions for a successful implementation of team teaching were made. By providing an overview of the literature on team teaching between student teachers and mentors, this study contributes to theory development about team teaching. Moreover, it may inspire teacher educators to implement team teaching. Our study may also inspire other higher education programs in which field experiences are essential.

Within higher education, field experiences in placement schools are crucial in preparing future teachers (Kyndt, Donche, Gijbels, & Van Petegem, 2014). While there are differences between teacher training programs in higher education with respect to the scope of field experiences, (e.g., the number and spread of lessons, the type of learners and schools), the underlying concept is generally the same: the student teacher works as a single trainee with an experienced teacher, the mentor (Sorensen, 2014). The field experiences usually start with an observation of the mentor. After this observation period, the student teacher receives the responsibility to individually take over the class during a specific number of hours (Bacharach, Heck, & Dahlberg 2010; Henderson, Beach, & Famiano, 2009). In the meantime, the mentor observes and coaches. His role is mainly being viewed as providing support and instruction through role modeling and feedback (Ambrosetti & Dekkers, 2010). Although the level of collaboration between student teacher and mentor generally remains low, this concept of mentoring student teachers has been successful in the past. Nevertheless, additional learning opportunities may arise through higher levels of collaboration, e.g., co-planning of the lesson, co-teaching during the lesson, or co-evaluating of the lesson. These activities of co-planning, co-teaching, and co-evaluating refer to team teaching, which is defined as “two or more teachers in some level of collaboration in the planning, delivery, and/or evaluation of a course” (Baeten & Simons, 2014, p. 93). Synonyms of team teaching are co-teaching, cooperative teaching, and collaborative teaching (Carpenter, Crawford, & Walden 2007; Channugam & Gerlach, 2013; Dugan & Letterman, 2008; Welch, 2002). For reasons of clarity, we consistently use the term “team teaching” in this article.

In the literature several models of team teaching exist which differ in the degree of collaboration among the team teaching partners, for instance, the “one teaching, one assisting” model (Cook & Friend, 1995), the “alternating teaching” model (Dugan & Letterman, 2008), the “parallel instruction” model (Al-Saaideh, 2010), and the “collaborative” model (Hanusch, Obijiofor, & Volcic, 2009). For an overview of these models, see Baeten and Simons (2014).

While review studies have been published on team teaching in higher education (e.g., Anderson & Speck, 1998), on team teaching between general and special education teachers, (e.g., Murawski & Swanson, 2001), and on team teaching between student teachers, e.g., Baeten and Simons, 2014, the literature on team teaching between student teacher and mentor has—to our knowledge—not been systematically reviewed. Two recent review studies showed that the role of the mentor as a team teacher of the student teacher has been rarely reported (Ambrosetti & Dekkers, 2010; Clarke, Triggs, & Nielsen, 2013). Therefore, team teaching between student teacher and mentor remains an area to explore.

Since team teaching between student teachers during field experiences has several benefits, not only for the student teachers themselves (e.g., support and professional growth), but also for the mentor (e.g. learning gains) and the learners in the classroom (e.g., support and rich lessons), it is interesting to examine whether these benefits are also applicable to team teaching between student teacher and mentor. Three research questions (RQ) guide our systematic literature search:

RQ1: Which models of team teaching between student teacher and mentor are present in the literature?

- RQ2: What are the reported advantages and disadvantages of these models for the student teacher, the mentor and the learners in the classroom?
- RQ3: What are the reported conditions for a successful implementation of these models?

Systematic retrieved information to answer these research questions contributes to theory development about team teaching. Moreover, it may inform teacher training programs in higher education about the benefits and disadvantages of different team teaching models and about conditions for a successful implementation of team teaching. Based on this information, teacher educators can decide which team teaching model(s) they will implement during student teachers' field experiences and anticipate possible disadvantages. Our study may also inspire other higher education programs in which field experiences are essential.

Research Methodology

In order to answer the three research questions, a literature search was conducted. Three electronic databases were included in the search: Web of Science, ERIC, and FRANCIS. The search terms were "co(-)teaching" and "team teaching" combined with "mentor", "cooperating teacher", "pre(-)service teacher", "classroom teacher", "student teacher", "teacher education", and "teacher training." By reading the abstracts of the retrieved manuscripts, relevant manuscripts were identified. In addition, the reference lists of these manuscripts were explored in order to search for other relevant manuscripts. Criteria for inclusion of manuscripts in the present review study were threefold:

1. In order to grasp an overview of the recent literature, the literature search was limited to the years 2000-2013.
2. In order to ensure the quality of the review study, manuscripts had to be peer reviewed.
3. Manuscripts had to address team teaching between student teacher and mentor during school placements in primary and secondary education.

As a result, 12 manuscripts were included in the review study. These manuscripts were read thoroughly in order to search for patterns in the results with the help of a coding scheme. The coding scheme consisted of four main codes, i.e., team teaching model (RQ1), advantages (RQ2), disadvantages (RQ2), and conditions for a successful implementation (RQ3). Sub-codes were retrieved from the literature (Baeten &

Simons, 2014) and further refined based on the data. Examples of sub-codes were:

- Team teaching model, e.g., assistant teaching model, teaming model
- Advantages, e.g., support, professional growth
- Disadvantages, e.g., high workload, unequal task division
- Conditions for a successful implementation, e.g., preparing for new roles, emphasizing dialogue

The coding process was conducted by the first author, who reviewed each manuscript twice. During this process, interpretations of the data were discussed extensively with the co-author. The retrieved information was incorporated into a narrative review, which provides "qualitative descriptions of the findings from literature" (Dochy, Segers, & Buehl, 1999, p. 150). In the Appendix, an overview is provided of the manuscripts included in this review study.

Research Results

Which Models of Team Teaching between Student Teacher and Mentor are Present in the Literature?

The Appendix shows that eight of the retrieved studies specify the team teaching model being implemented in the study. Based on these descriptions, three team teaching models come to the fore: (1) the co-planning and co-evaluation model (Chaliès, Bertone, & Flavier, 2008; Nilsson & van Driel, 2010); (2) the assistant teaching model (Eick & Dias, 2005; Eick, Ware, & Williams, 2003, 2004); and (3) the teaming model (Scantlebury, Gallo-Fox, & Wassell, 2008; van Velzen, Volman, & Brekelmans, 2012; van Velzen, Volman, Brekelmans, & White, 2012). The other studies (Carambo & Stickney, 2009; Roth & Tobin, 2001; Roth, Tobin, Carambo, & Dalland, 2004; Tobin, Roth, & Zimmerman, 2001) included in this review do not specify the model being implemented. Instead, in these studies, student teacher and mentor had freedom in shaping their team teaching to fit the circumstances.

The co-planning and co-evaluation model. According to the co-planning and co-evaluation model, the collaboration between student teacher and mentor takes place during the planning and evaluation of the lesson. During the delivery of the lesson, only one person (student teacher or mentor) has full responsibility for the lesson (Chaliès et al., 2008; Nilsson & van Driel, 2010). In the study of Chaliès and colleagues (2008), interventions of the mentor in the student teacher's lesson could occur but were limited to interventions that optimize the opportunities for learners to learn new skills.

The assistant teaching model. In the assistant teaching model, one person (student teacher or mentor) takes the lead, while the other person assists him during the lesson. In the study of Eick and colleagues (2003), the student teacher first observes and assists the mentor in teaching a lesson. Afterwards, roles are changed and the student teacher takes the lead in teaching segments or an entire lesson with the assistance of the mentor. In the studies of Eick and colleagues (2004) and Eick and Dias (2005), two (instead of one) student teachers are placed as partners with a mentor. First, they both assist the mentor as peripheral participants. Next, one student teacher takes the lead in teaching segments with assistance of the mentor (as equal co-teacher) and the other student teacher (as peripheral participant). Interventions of the mentor consist of adding what might be forgotten, correcting the learners' misbehavior, emphasizing points of learning, gently correcting mistakes, etc. Activities of the peripheral participant include monitoring learners' on-task behavior, assisting learners needing help, making notes that can be used as feedback for the other student teacher, etc. Finally, the student teacher takes the lead in teaching the entire lesson.

The teaming model. According to the teaming model, the collaboration between student teacher and mentor takes place during the planning, delivery and evaluation of the lesson (Scantlebury et al., 2008; van Velzen et al., 2012a, b). In the studies of van Velzen and colleagues (2012a, b), the teaming model is part of a teaching cycle consisting of three lessons: the first lesson is taught by the mentor, the second lesson is co-taught by the mentor and the student teacher, and the third lesson is taught by the student teacher. Before the start of this teaching cycle, the student teacher formulates his learning needs together with the teacher educator. Each student teacher participates in two teaching cycles.

What are the Advantages and Disadvantages of These Models for the Student Teacher, the Mentor, and the Learners in the Classroom?

In this section, (dis)advantages of team teaching between student teacher and mentor are presented for each model: the co-planning and co-evaluation model, the assistant teaching model, and the teaming model. Within each category, the perspectives of student teachers, mentors and learners are studied, in case data on these perspectives were available. As indicated, several studies did not specify the team teaching model. Nevertheless, these studies reported (dis)advantages of team teaching between student teacher and mentor as well. These (dis) advantages are listed below.

Advantages and disadvantages of the co-planning and co-evaluation model. Concerning the

co-planning and co-evaluation model, advantages were found for student teachers (i.e., *professional* and *personal growth*) and for mentors (i.e., *professional growth*). The retrieved manuscripts did not mention specific advantages for learners. No disadvantages were reported.

Student teachers. The *professional growth* of student teachers is observed through the development of subject-matter knowledge and class management skills during co-planning and co-evaluating with their mentors. During co-planning and co-evaluation, student teachers and mentors discuss what and how to teach, how to ask and respond to questions, how to deal with unexpected events, etc. During these conversations, student teachers learn a lot from their mentors because their mentors know how to handle different situations and how to recognize and interpret critical situations in the classroom. Moreover, they encourage the student teachers to focus on the learner's learning rather than on instruction delivery. Furthermore, after having planned and discussed a lesson with their mentor, student teachers learn while observing their mentors during that lesson (Nilsson & van Driel, 2010).

Besides co-planning and co-evaluating, teaching a lesson in the presence of the mentor is considered important. While teaching, not only the strategies discussed during the co-planning, but also new strategies can be learned and applied. The presence of the mentor encourages the student teacher to experiment with these strategies. These strategies generally relate to pedagogical knowledge, for instance, demonstrate what has to be done by the learners or give responsibility to learners excused from participating in the lesson. In traditional mentoring situations, this type of strategies is less frequently learned (Chaliès et al., 2008).

Besides professional growth, student teachers experience a *personal growth*. When working with mentors for co-planning and co-evaluation, they feel more confident in their teacher role (Nilsson & van Driel, 2010).

Mentors. When co-planning and co-evaluating, not only student teachers but also mentors experience a *professional growth*. Mentors learn much through working with student teachers and through observing their teaching. In this way, they have the opportunity to step back and reflect on another person's teaching through which they can directly verify and develop their own teaching skills. At times, mentors may feel insecure about course contents or new developments (e.g., ICT) and on these occasions, student teachers may explain the contents to them (Nilsson & van Driel, 2010).

The professional growth of both student teachers and mentors not only depends on their collaboration, but also on the interaction with the learners. They both

learn from the learners' explanations and questions, which makes them aware of their own subject-matter knowledge or the lack of it (Nilsson & van Driel, 2010).

Advantages and disadvantages of the assistant teaching model. The manuscripts describing the assistant teaching model only report (dis)advantages for student teachers. (Dis)advantages for mentors or learners are not reported. As far as the advantages of the model for student teachers are concerned, three categories can be distinguished: *support*, *professional growth*, and *personal growth*. With the assistance of the mentor in the classroom, student teachers feel comfortable and *supported* in taking the lead in teaching, whether the mentor is highly involved or not. The assistance of the mentor may consist of (a) providing assistance to keep the lesson on track, (b) giving directions to better manage the learners, e.g., during transitional points in the lesson, (c) clarifying concepts and answering learners' questions that the student teacher cannot answer, and (d) handling discipline. The mentor is viewed as the final "back-up" if something fails (Eick et al., 2003).

Besides providing support, the assistance of the mentor contributes to student teachers' *professional growth*. It makes them learn "on the spot" since assistance is given and corrections are made by the mentor when needed rather than after the teaching activity. On the other hand, through heightened observation while assisting the mentor, student teachers have more opportunities to learn what is working and what is not, which stimulates them to critically reflect on the teaching process. As such, they strive to model and improve rather than mimicking the mentor's approach (Eick et al., 2003). Initially, this modeling may be difficult for student teachers as they especially struggle with giving clear and adequate directions to learners before a teaching activity and with questioning about their learning after a teaching activity. Also student teachers' reflections go through a development process. While student teachers initially focus on basic management and discipline issues that require simple answers, they later on reach higher levels of reflective thinking in which a more critical attitude comes to the fore (Eick & Dias, 2005).

A specific characteristic of the approach used in the study of Eick et al. (2003) is the fact that student teachers use the existing lesson plans of the mentors. Consequently, they have more time to focus and reflect on the lesson materials and on the enactment of the lesson. This procedure is appreciated by the mentors since they can go on with their existing lesson plans without interruption despite the internship of the student teacher. One mentor considers this continuity better for the learners in the classroom.

With respect to *personal growth*, student teachers report feeling more confident in teaching and managing

the classroom through greater assertiveness because of the presence of the teacher (Eick et al., 2003).

Regarding disadvantages for student teachers, feelings of frustration were reported in case there were changes in the lesson planning, which urged for *last-minute communication* about adjustments to the lesson (Eick & Dias, 2005; Eick et al., 2003).

Advantages and disadvantages of the teaming model. The retrieved manuscripts on the teaming model mention advantages as well as disadvantages for student teachers as well as mentors. Advantages of the teaming model for student teachers can be grouped into the following categories: *support*, *dialogue*, and *professional growth*. Advantages for the mentor are *professional* and *personal growth*. Besides advantages, there are some disadvantages, for both student teachers and mentors, e.g., *high workload* and *unequal task division*. First, we will go into advantages for both team teaching partners involved. Next, we will describe the disadvantages.

Student teachers. Collaboration in lesson planning, teaching, and evaluation is appreciated by the student teachers (van Velzen et al., 2012a, b). They experience team teaching as a safe learning environment in which the mentor can *support* them during their teaching practice (Scantlebury et al., 2008; van Velzen et al., 2012a, b). The interventions of the mentor are not experienced as harmful for their own authority. On the contrary, in this way, the learners in the classroom observe that everyone has to learn. In advance, student teacher and mentor may discuss the signals by which they can communicate with each other during team teaching (van Velzen et al., 2012a, b). In the study of van Velzen et al. (2012a, b), only one mentor was reluctant to intervening during the student teacher's teaching practice because the learners in the classroom were not used to this kind of intervention.

The collaboration between student teacher and mentor provides student teachers with plenty of opportunities to share practical knowledge and learn from their mentor. The *dialogue* before and after the teaching practices (i.e., co-planning and co-evaluation) reaches deeper levels, and important issues come earlier to the fore than in traditional mentoring conversations. The focus on the student teacher's learning needs within these conversations is appreciated by both student teachers and mentors and encourages them to discuss additional learning needs arising from practice. Also the mentors and teacher educators appreciate the increased communication and the focus on the student teacher's learning needs (van Velzen et al., 2012a, b).

Further, the use of the teaming model contributes to the *professional growth* of the student teacher. During team teaching, student teachers have many opportunities to practice distinct components of teaching (van Velzen et al., 2012a, b) and, subsequently, they reach several learning gains (e.g.,

generating new ideas and enriching existing curricula) (Scantlebury et al., 2008).

Mentors. Not only student teachers but also their mentors appreciate the collaboration in lesson planning, teaching, and evaluation. Mentors learn from their student teachers, which contributes to their own professional growth (Scantlebury et al., 2008; van Velzen et al., 2012a, b). They discuss new approaches induced by the student teachers (e.g., the use of activating teaching methods and ICT) and implement them in their own teaching practice (van Velzen et al., 2012a, b). Compared to mentors, student teachers often have more recent subject knowledge and technical skills which can generate new ideas for the mentors and enrich their curricula (Scantlebury et al., 2008).

In addition to a professional growth, a *personal growth* of mentors becomes apparent because their expertise in training student teachers is valued (van Velzen et al., 2012a, b). Throughout the cyclical process taking place in the study of van Velzen et al. (2012a, b), mentors begin to recognize and value their practical knowledge, which improves their self-confidence. However, mentors also report that it is not always easy to substantiate their ideas. Also, showing the desirable teaching behavior related to the learning needs of the student is not always easy (van Velzen et al., 2012a, b).

A first disadvantage of the teaming model for both student teachers and mentors is a *high workload*. The planning and evaluation of team teaching take more time than in traditional mentoring situations (van Velzen et al., 2012a, b). A second disadvantage is an *unequal task division*. Mentors consider it to be difficult to step back and provide opportunities for the student teacher to step up and take co-responsibility. They easily take an equal responsibility for the instructional part of the lesson but an equal responsibility for classroom authority issues evolves more slowly. In addition, according to student teachers, mentors may regularly come to the planning sessions with the lessons already prepared. Mentors, on the other hand, report that student teachers have a tendency to come to class unprepared (Scantlebury et al., 2008).

Advantages and disadvantages of other models of team teaching between student teacher and mentor. In the studies of Carambo and Stickney (2009), Roth et al. (2004), Roth and Tobin (2001) and Tobin and colleagues (2001), which do not specify a particular team teaching model, several advantages of team teaching are reported. Advantages for the student teacher are *support*, *dialogue*, *professional* and *personal growth*. Advantages for the learners in the classroom are a *high engagement*, *few disciplinary problems* and an *acquaintance with a wide variety of teaching styles*. Disadvantages for both student

teachers and mentors are a *limited freedom* and a *lack of compatibility*.

Advantages of other models of team teaching between student teacher and mentor.

Student teacher. Thanks to team teaching, the mentor can provide (professional) *support* to the student teacher (Tobin et al., 2001). For instance, if the student teacher does not know how to present a new topic, the mentor can intervene and move the lesson into a new direction. For the student teacher, moving the lesson in new directions is more difficult because on his own, he has fewer actions available to implement in a lesson. In case of team teaching with a mentor, he has more actions available because the actions of the mentor provide supporting resources (Roth et al., 2004).

Besides support, team teaching has lots of potential for *dialoguing*. The team teachers experience the same situation and look at it from the inside (as a teacher in front of the classroom). As a consequence, they have shared experiences to talk about. During these conversations, differences in perceptions become apparent and stimulate changes in the teaching practice (Roth & Tobin, 2001). Moreover, the sharing of ideas about lesson plans is appreciated by student teachers (Tobin et al., 2001).

During team teaching, the professional relationship of the student teacher with the mentor enhances the development of their teaching practice and the quality of their interactions in the classroom (Carambo & Stickney, 2009). This *professional growth* can be due to the fact that in team teaching, there is the possibility to observe different teaching styles and to openly critique, assess, and receive (constructive) feedback. Consequently, student teachers are encouraged to try methods that they previously did not use (Tobin et al., 2001). Since the mentor always can step forward and provide additional learning opportunities for the learners in the classroom, the student teacher also learns what can be good teaching at a particular moment (Roth & Tobin, 2001). Moreover, student teachers learn to collaborate as a team (Tobin et al., 2001). Roth and colleagues (2004) report that after a while, team teachers have a tendency to act in the same way.

Further, through the presence of the mentor as a team teacher, student teachers experience *personal growth*. They feel confident in trying new approaches and asking for an honest critique. If the student teacher were solely an observer or part-time participant, this might have been more intimidating (Tobin et al., 2001).

Learners. With regard to the learners, the presence of multiple teachers in the classroom encourage a *high engagement*. Learners pay more attention, there is more activity and less time gets lost (Carambo & Stickney, 2009). Moreover, there are *few disciplinary problems* (e.g., learners being inattentive or evoking commotions) (Roth et al., 2004; Tobin et al., 2001) and learners are

being *confronted with a wide variety of teaching styles* (Tobin et al., 2001).

Disadvantages of other models of team teaching between student teacher and mentor. A first disadvantage for the team teachers refers to the fact that there is *limited freedom* in teaching the learning contents since agreements need to be made between the team teachers (Tobin et al., 2001). Moreover, teaching with a mentor limits the diversity of events that arise in the classroom. When the student teacher is alone, he will learn more (Roth & Tobin, 2001).

A second disadvantage refers to situations in which team teachers have very different views on the content or teaching practice and where there is a *lack of compatibility* between them. This may result in friction unless there is sufficient and open communication. In the latter case, these differences are an advantage and may enhance reflection and exchange of ideas (Carambo & Stickney, 2009). Figure 1 gives an overall overview of the advantages and disadvantages of the different team teaching models.

What are the Conditions for a Successful Implementation of these Models?

We grouped the conditions for a successful implementation of team teaching between student teacher and mentor into four categories: (1) preparing student teachers and mentors for their new roles; (2) emphasizing dialogue between team teaching partners; (3) developing relationships characterized by openness, trust, respect, and equity; and (4) investing time in team teaching.

Preparing student teachers and mentors for their new roles. Mentors generally take up the role of observer and coach of the student teachers and are therefore not used to team teach with them (Chaliès et al., 2008), so particularly mentors experience difficulties in adapting to their new role of team teacher (Roth & Tobin, 2001). They have to learn to take a step back and to support the student teachers who take up the role of equal team teacher (Scantlebury et al., 2008). Therefore, they have to learn how to make their teaching knowledge explicit, for instance, by observing their own teaching practice and explaining what they are doing and why (van Velzen et al., 2012a). Besides taking up a new role, it is important that they dialogue about this role with the student teacher (Roth & Tobin, 2001).

In order to be prepared for team teaching, student teachers must study the content of the team-taught lessons in advance. If they are not familiar with the topic, they may be hesitant and unsure, and they may not be able to respond to the learners' questions. In this case, their confidence may suffer seriously. In case student teacher and mentor do not co-plan and student

teachers are insufficiently prepared, the transition to team teaching can be difficult (Eick et al., 2004).

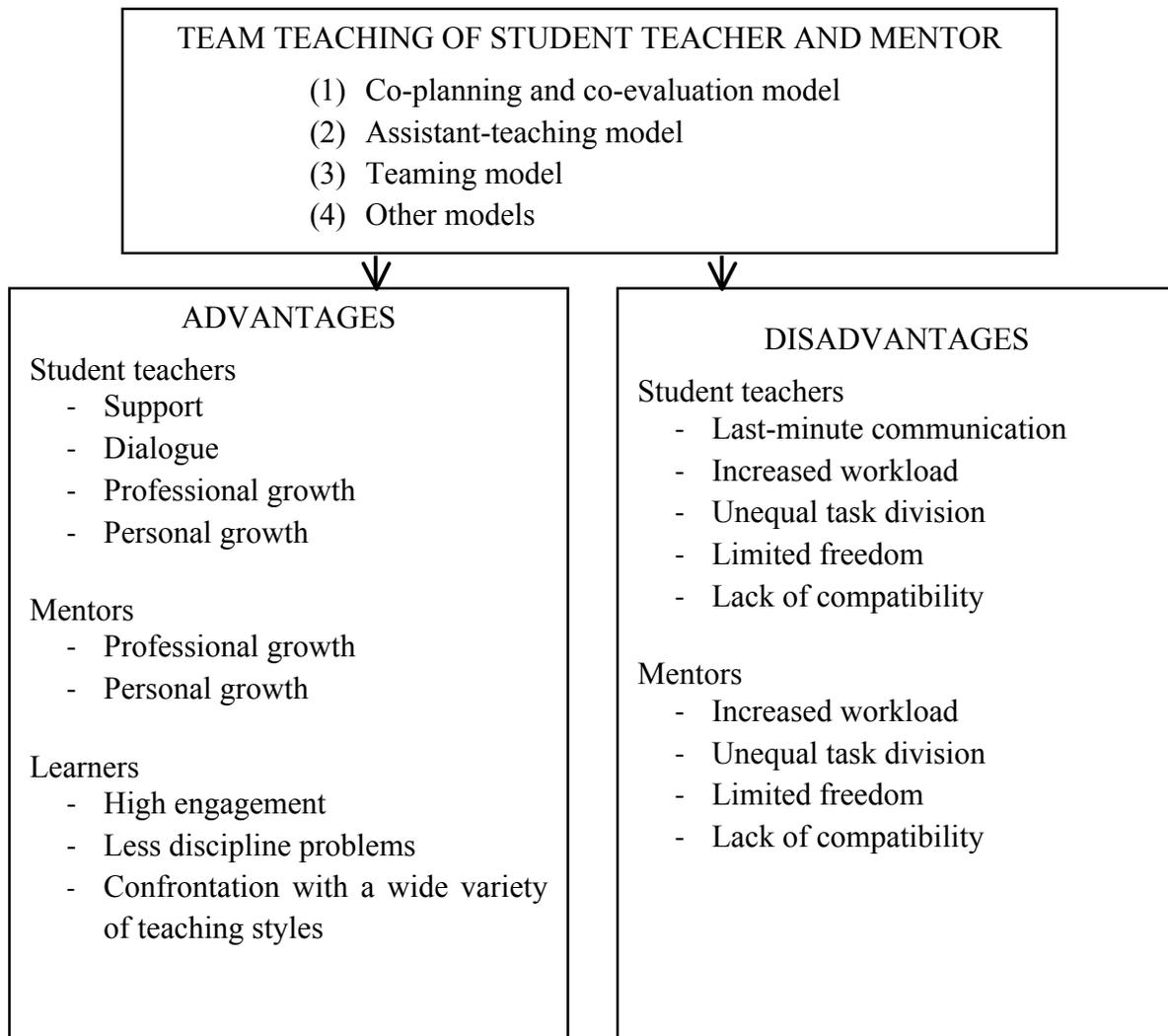
Emphasizing dialogue between team teaching partners. Dialogue among team teaching partners is perceived to be crucial for successful team teaching, both by student teachers and their mentors, since learning does not only occur during teaching but also during dialoguing (Eick et al., 2003). It has been advised that mentors communicate and discuss their lesson plans and learning materials to the student teachers in advance so that they are sufficiently prepared (Eick et al., 2003, 2004). Their lesson plans should be detailed enough since student teachers need more structure about lessons than experienced teachers do (Eick et al., 2004). Changes in lesson plans may occur, for instance because of adjusting pacing and schedule interruptions, which stresses the need for last-minute communication between the partners. Eick et al. (2003) report that student teachers experience this type of communication as very frustrating. Moreover, mentors should share classroom policies and other duties that go with teaching, for instance, disciplining learners, passing out papers, assisting with lunch duty, grading papers, and doing paperwork (Eick et al., 2004). Only in this way student teachers can fully participate as team teaching partners.

It is also important that both partners meet after team teaching to share constructive feedback with the aim of improving their teaching practice (Eick et al., 2004). Co-generative dialogue is an interesting tool to do so (Carambo & Stickney, 2009). This type of dialogue is an open discussion among the team teaching partners based on shared experiences (e.g., a lesson, an assessment) with the aim of changing and improving teaching and learning (Copping, 2012; Scantlebury et al., 2008). The strength of a co-generative dialogue is that all members (team teachers but regularly also a selection of learners) reflect on common objects, often replayed using videotapes of the lesson, and that the views of all participants are valued. In this respect, ideas for improvement (what worked and what did not work) are co-generated (Tobin & Roth, 2005). This kind of conversation encourages students to think deeply about their teaching (Eick et al., 2004). If team teaching takes place over consecutive days, the dialogue can be more productive and richer (Eick et al., 2003).

Besides the meetings before and after the lessons, mentors and student teachers should meet at other points in time in order to get to know each other and talk informally about teaching, for instance, eating lunch together or carpooling (Eick et al., 2004; Scantlebury et al., 2008).

Developing relationships characterized by openness, trust, respect, and equity. Besides providing sufficient opportunities for dialoguing, the quality of the relationship between the team teachers is important. It should be characterized by openness.

Figure 1
Overview of (dis)advantages of team teaching between student teacher and mentor.



Since team teaching involves collaboration in the classroom and student teachers being more than simply passive observers, it requires a risk-taking attitude from mentors. Mentors should be willing to demonstrate and discuss their own teaching practices and to learn from student teachers. Moreover, they should be able to make practical knowledge explicit and to withhold their judgment on student teachers' ideas and activities (van Velzen et al., 2012a, b).

Further, there should be trust (van Velzen et al., 2012a, b) and mutual respect between the team teachers, which encourages communication, the sharing of ideas, and the openness to constructive criticism (Scantlebury et al., 2008). While one teacher is teaching, the other can verbally interject, (e.g., adding what might

be forgotten, gently correcting a mistake, emphasizing a point of learning, or correcting student misbehavior). These interjections should feel natural and may not be considered as a way to critique or embarrass the teacher. Both partners should feel free to interject but always must give the lead teacher the chance to teach first (Eick et al., 2004).

In addition, both partners should consider each other as equal peers who can provide valuable insights and knowledge. Both mentor and student teacher share equal roles in co-planning, co-teaching, and/or co-evaluating. It may be difficult for mentors to accept this equal role sharing with a student teacher who is just starting his internship (Eick et al., 2004). If mentors position themselves as more powerful (e.g., by not

equally sharing the preparation or by excluding student teachers from decision-making processes), student teachers lose respect for them (Scantlebury et al., 2008).

Investing time in team teaching. Team teaching between student teacher and mentor requires time to be successful. Since both partners are not used to team teaching, it takes time to develop a constructive, professional relationship (Chaliès et al., 2008). Both partners have to get used to each other's teaching style (Eick et al., 2004). Further, it has been suggested that dialogues could be richer if team teaching takes place over consecutive days (Eick et al., 2003). Therefore, it seems important to spread team teaching over time. In addition, team teaching is time intensive, for instance, due to the frequent conversations taking place (van Velzen et al., 2012b). Nevertheless, it is considered a way to become more conscious of the way teachers act and think (van Velzen et al., 2012).

Conclusions and Discussion

The present study focuses on innovative field experiences in the teacher training program. In particular, the literature on team teaching between student teacher and mentor was systematically reviewed. The literature search shows that team teaching between student teacher and mentor can take place by means of different models, e.g., the co-planning and co-evaluation model, the assistant teaching model, and the teaming model. While only one teacher has the teaching responsibility in the co-planning and co-evaluation model, the teaching responsibility is divided among the team teaching partners in the assistant teaching model and the teaming model. In the assistant teaching model, one teacher has the primary responsibility while the other assists. In the teaming model, both teachers share equal responsibility in the planning, delivery, and evaluation of the lesson.

Introducing team teaching of student teacher and mentor during field experiences entails several advantages for the actors involved, i.e., the student teacher, the mentor and the learners in the classroom. Through team teaching with a mentor, student teachers feel supported. They have ample opportunities to dialogue with the mentor and experience a professional growth, (e.g., class management skills) and a personal growth (e.g., self-confidence). Mentors also report increases in their professional growth (e.g., recent subject knowledge) and their personal growth (e.g., self-confidence), and learners show a high engagement in the course, experience few disciplinary problems, and get to know a wide variety of teaching styles. Nevertheless, disadvantages are reported as well, both for student teachers and mentors, e.g., they experience a high workload, an unequal task division, and limited

freedom during team teaching. In addition, a lack of compatibility between student teacher and mentor may cause problems.

Notwithstanding the disadvantages, team teaching between student teacher and mentor seems to be beneficial. Therefore, it may be encouraged to implement this kind of teaching during field experiences in teacher training programs. A combination with individual teaching seems appropriate since for some student teachers it may be more effective to plan and teach individually (Eick et al., 2004). When implementing team teaching, it is important to prepare both team teaching partners for their new roles, to emphasize dialoguing between the partners, to develop relationships among the partners that are characterized by openness, trust, respect and equity and to invest time in team teaching.

Due to the lack of research on team teaching between student teacher and mentor, it might be difficult to convince mentors to team teach with a student teacher. Mentors have often worked autonomously for many years, and in team teaching, they need to share the teaching space (Scantlebury et al., 2008). This review study, showing the benefits of team teaching, could be a first step in convincing them to team up with a student teacher.

Despite the added value of this study to the team teaching literature, some limitations can be acknowledged. First, for each model several perspectives and (dis)advantages were studied. If a perspective or a (dis)advantage has not been reported for a model, this does not mean that the (dis)advantage does not apply to the model. It could be that it has simply not been investigated. Secondly, the perspective of the teacher educator has been neglected. The empirical studies mainly focused on the student teachers, mentors, and learners. This may be explained by the fact that the teacher educators were not directly implicated in the team teaching. Thirdly, since a narrative review is based on the reviewers' intuitive process, it is possible that our own views may have influenced our interpretations of the literature. Nevertheless, a narrative review makes it possible to give in-depth information about a topic (Dochy et al., 1999).

Notwithstanding the limitations, the present review gives a systematic overview of models of team teaching between student teacher and mentor, their (dis)advantages, and conditions for implementation. In this way, our study may inspire teacher educators to implement team teaching between student teacher and mentor in the future. Moreover, based on the current literature review, several guidelines for further research can be formulated. First, the studies included in the review all made use of qualitative data analysis methods. Therefore, it would be complementary to

corroborate these findings with quantitative studies. Secondly, most studies took place in science education. It would be interesting to investigate whether the findings are generalizable to other subjects as well. Thirdly, all studies took place on a small scale. Conducting a large-scale study could strengthen the findings. Fourthly, the studies focused on the implementation of team teaching without comparing it with a control group. Consequently, there is a need for more quasi-experimental research on the effectiveness of team teaching between student teachers and their mentors (Carpenter et al., 2007; Murawski & Swanson, 2001; Welch, Brownell, & Sheridan, 1999), for instance, comparing different models of team teaching or comparing team teaching and individual teaching. Fifthly, there is a need for research focusing on the conditions that influence the learning process of student teachers during team teaching (Dang, 2013; Gardiner & Robinson, 2009) and on the effects of team teaching on student teachers' achievement (Carambo & Stickney, 2009). Sixthly, longitudinal research investigating the effects of team teaching on the future teaching career (Nokes, Bullough, Egan, Birrell, & Hansen, 2008) may be interesting. Finally, it would be interesting to investigate models of collaboration between mentor and mentee in other fields of workplace learning in higher education.

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Appendix
Studies Included in the Review Study

Author	Model	Aim / Research questions	Subjects	Data collection	Data analysis	Control group?
Carambo & Stickney (2009)	No model specified	- Experiences of the academic coordinator and mentor teacher of the learning community in which two student teachers completed their teaching practice.	- Student teachers and their mentors	- Theoretical paper	/	/
Chaliès et al. (2008)	Co-planning and co-evaluation model: 1. The mentor observes one lesson of the student teacher 2. Co-preparation: They both evaluate the lesson of the student teacher and prepare the next lesson 3. Teaching: the student teacher has full responsibility for managing the lesson 4. Co-evaluation of the lesson	- Evaluating the advantages and limits of a collaborative mentoring sequence regarding the rules learned and/or used by the student teacher. - Identifying the two circumstances that most favored the student teacher's professional development.	- 1 student teacher and his mentor - Pair - Secondary education (physical education)	- Video-taping of the lesson, co-preparation, co-teaching, co-evaluation - Interviews with student teacher and mentor (separately) about video-taped data	Qualitative	No
Eick et al. (2003)	Assistant-teaching model: Co-teaching by observing and assisting the mentor, afterwards taking the lead with assistance of the mentor	- What aspects of domain-specific knowledge from authentic practice could student teachers develop from this co-teaching experience? - What advantages and disadvantages do mentor and student teachers see from this co-teaching approach? - How do these student teachers reflect on their ability to implement inquiry-based forms of teaching in the context of co-teaching?	- 10 student teachers and their mentors - Pair - Secondary education (science education)	- Observation of the co-teaching arrangement - Field notes (classroom dialogues, interactions, ...) - Reflective journal (student teachers) - Questionnaire (student teachers and mentors)	Qualitative	No

Author	Model	Aim / Research questions	Subjects	Data collection	Data analysis	Control group?
Eick et al. (2004)	Assistant-teaching model: Co-teaching by observing and assisting the mentor, afterwards taking the lead with assistance of the mentor and a fellow student teacher	<ul style="list-style-type: none"> - Developing a primer for mentors and student teachers with information and suggestions for them to follow in making the co-teaching model more effective in learning to teach. 	<ul style="list-style-type: none"> - Student teachers and their mentors - Triad (two student teachers and one mentor) - Secondary education (science education) 	<ul style="list-style-type: none"> - Theoretical paper 	/	/
Eick & Dias (2005)	Assistant-teaching model: Co-teaching by observing and assisting the mentor, afterwards taking the lead with assistance of the mentor and a fellow student teacher	<ul style="list-style-type: none"> - How does methods student thinking about practice and structured inquiry change over time through authentic practice in this co-teaching model? - How does learning to teach in this co-teaching model utilize methods students' past and ongoing educational experience in developing practical teacher knowledge for using structured inquiry? 	<ul style="list-style-type: none"> - 11 student teachers - Triad (two student teachers and one mentor, 1 student teacher did not have a partner) - Secondary education (science education) 	<ul style="list-style-type: none"> - Observation of the co-teaching arrangement - Field notes (classroom dialogues, interactions, ...) - Electronic dialogue journal (student teacher) - Final reflective summary (student teacher) 	Qualitative	No
Nilsson & van Driel (2010)	Co-planning and co-evaluation model: Co-planning, teaching (both student teacher and mentor are present but only one is responsible for the lesson), co-reflecting/evaluation	<ul style="list-style-type: none"> - What knowledge do student teachers develop from their mentors while jointly planning and reflecting on each other's science lessons? - What knowledge do mentors develop from student teachers while jointly planning and reflecting on each other's science lessons? - What knowledge do student teachers and mentors develop through interaction with students? 	<ul style="list-style-type: none"> - 2 student teachers and their mentors - Pair - Primary education (science education) 	<ul style="list-style-type: none"> - Video-taping of lessons - Stimulated recall sessions on the video-taped lessons - Tape recording of planning sessions and stimulated recall sessions - Written reflections of student teachers and their mentors 	Qualitative	No
Roth & Tobin (2001)	No model specified	<ul style="list-style-type: none"> - Developing co-teaching as praxis and conceptual framework. 	<ul style="list-style-type: none"> - Student teachers (university) and their mentors - Pairs & triads - Secondary education (science education) 	<ul style="list-style-type: none"> - Vignettes 	Qualitative	No

Author	Model	Aim / Research questions	Subjects	Data collection	Data analysis	Control group?
Roth et al. (2004)	No model specified	<ul style="list-style-type: none"> - Exploring how the teaching practices of an experienced mentor provide resources for his intern co-teacher to learn to teach by teaching, employing central and peripheral roles 	<ul style="list-style-type: none"> - 1 student teacher and his mentor - Pair - Secondary education (science education) 	<ul style="list-style-type: none"> - Observational, methodological, and theoretical field notes - Videotaping of lessons and co-generative dialogue sessions - Interviews with the student teacher and the learners - Collecting the teaching-related discussions student teachers held using an online internet forum - Journal of the student teacher - Reflections on teaching and on the lesson plans 	Qualitative	No
Scantlebury et al. (2008)	Teaming model	<ul style="list-style-type: none"> - What were the model's characteristics that afforded or hindered co-teaching? - Are these characteristics aligned? If so, what are their relationships in practice? - How can teacher educators support the successful implementation of the co-teaching model? 	<ul style="list-style-type: none"> - 6/9 senior-year student teachers (university), mentors, teacher educators - A combination of at least two peers and two mentors - Secondary education (science education) 	<ul style="list-style-type: none"> - Interviews (student teachers, mentors, teacher educators) - Observations 	Qualitative	No
Tobin et al. (2001)	No model specified	<ul style="list-style-type: none"> - Experiences of a student teacher who is assigned for his field experiences to an urban high school. 	<ul style="list-style-type: none"> - 2 student teachers and co-teachers (mentor, university supervisor, high school students) - Pairs, triads, quartet - Secondary education (science education) 	<ul style="list-style-type: none"> - Video-taping of the analysis session/verbal interactions/co-generative dialogues - Recording debriefings - Reflections in journals - Face-to-face and e-mail interactions 	Qualitative	No

Author	Model	Aim /Research questions	Subjects	Data collection	Data analysis	Control group?
van Velzen et al. (2012a, b)	Teaming model: A cycle of 3 lessons: (1) a lesson given by the mentor; (2) a lesson given by the mentor and the student teacher; (3) a lesson given by the student teacher.	<ul style="list-style-type: none"> - How do mentors, student teachers and school-based teacher educators assess the effectiveness of the collaborative mentoring approach and its components as means of guided work-based learning? - Which conditions contribute to the effectiveness of the collaborative mentoring approach according to the participants? 	<ul style="list-style-type: none"> - 3 teams consisting of 1 student teacher, 1 mentor and 1 school-based teacher educator - Triads - Secondary education (chemistry, geography, English) 	<ul style="list-style-type: none"> - Semi-structured interviews (student teachers and mentors) - Group interviews (mentors and school-based teacher educators) - Questionnaire (student teachers) - Logbooks (student teachers and mentors) - Portfolio's (student teachers) - Audio-taping of the conversations about the concept maps 	Qualitative	No