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Student teachers' team teaching: how do learners in the classroom experience team-taught lessons by student teachers?

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ABSTRACT

This study focuses on student teachers' team teaching. Two team teaching models (sequential and parallel teaching) were applied by 14 student teachers in a quasi-experimental design. When implementing new teaching models, it is important to take into account the perspectives of all actors involved. Although learners are key actors in the teaching process, their perspective is often ignored. Therefore, the central research question is: How do learners experience sequential and parallel teaching? A questionnaire was administered to the 229 learners participating in the experiment. Exploratory factor analysis and multilevel analysis revealed that both models were evaluated positively. However, parallel teaching scored significantly higher on advantages whereas sequential teaching scored higher on disadvantages. Quantitative content analysis revealed additional information. Benefits of parallel teaching were high levels of concentration and involvement and a positive atmosphere. In sequential teaching, learners appreciated the additional support and variation. Disadvantages of sequential teaching referred to the fact that it was confusing and to differences between both teachers. Learners in parallel teaching disliked the splitting of the class group. They were concerned that both learner groups would not be treated equally. These findings reveal that from the learners' perspective, parallel teaching should be preferred above sequential teaching.

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Introduction

In teacher education programmes, field experiences are crucial in preparing future teachers (Al-Hassan, Al-Barakat, and Al-Hassan 2012; Kyndt et al. 2014). Field experiences generally start with an observation period, in which the student teacher observes an experienced teacher at work. After this observation period, the student teacher receives the responsibility to individually take over the class during a specific number of hours (Bacharach, Heck, and Dahlberg 2010; Henderson, Beach, and Famiano 2009). The role of the experienced teacher

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Table 1. Team teaching models.

	Model	Role partner 1	Role partner 2
Low level of collaboration	(1) Observation model	Full responsibility Teacher	Observer
	(2) Coaching model	Full responsibility Teacher	Coach
	(3) Assistant teaching model	Main responsibility Teacher	Assistant (e.g. provide support to learners, use media)
	(4) Equal status model	Identical status and responsibilities	
	(a) Parallel teaching model	(a) The class group is divided into subgroups	
		Each teacher teaches the same learning contents/activities to a subgroup	
	(b) Sequential teaching model	(b) The learning contents or activities are divided	
		Each teacher is responsible for a different phase of the lesson	
	(c) Station teaching model	(c) The class group and the learning contents/activities are divided	
		Each teacher teaches a specific content/activity to a subgroup	
	(5) Teaming model	Full collaboration in the planning, delivery and evaluation of the lesson	
High level of collaboration	high level of collaboration	Considered to be 'true' team teaching	

(i.e. the mentor) is usually to provide instruction and support through role modelling and feedback (Ambrosetti and Dekkers 2010). During field experiences, the student teacher is typically placed individually with a mentor (Sorensen 2014).

Since collaboration within schools has gained in importance (collegial visitation, co-teaching with a special educator, and so on here) (Musanti and Pence 2010), teacher education institutes show a growing interest in field experiences inspired by collaborative learning (Gardiner and Robinson 2009; Nokes et al. 2008; Sorensen 2014). In order to minimise the 'reality shock' that beginning teachers often experience (Correa, Martínez-Arbelais, and Aberastury-Apraiz 2015; Kessels 2010; Veenman 1984), student teachers should be prepared for this collaborative culture. In this respect, research shows that successful teacher learning features collaboration and collegiality (de Vries et al. 2014). Moreover, collaboration between students, in which they help and support each other (e.g. peer learning, peer tutoring), has several benefits. For instance, it enhances students' communication skills and their academic achievement (Topping 2005). In addition, teacher education institutes are regularly confronted with the difficulty of finding a sufficient number of school placements for their student teachers (Bullough et al. 2003; Nokes et al. 2008). The traditional concept of field experiences, in which one student teacher works with one mentor, does not always seem to be compatible with this reality. Therefore, collaborative placements could be a good alternative for individual placements.

Research studies on collaborative placements generally focused on paired placements (e.g. Bullough et al. 2003; King 2006; Smith 2004). By hosting student teachers in pairs in a placement school, opportunities for collaboration, and in particular for team teaching, arise. Following the authors' previous research (Baeten and Simons 2014, 93), team teaching is here taken to refer to 'two or more teachers in some level of collaboration in the planning, delivery, and/or evaluation of a course'. Synonyms of team teaching are co-teaching, collaborative teaching and cooperative teaching (Carpenter, Crawford, and Walden 2007; Dugan

and Letterman 2008; Welch 2002). For clarity reasons, the authors consistently use the term 'team teaching' in this paper.

Team teaching by student teachers demonstrates several advantages for them (Baeten and Simons 2014). For instance, it provides emotional and professional support (e.g. Bullough et al. 2003; Goodnough et al. 2009; Gardiner and Robinson 2009) and it results in learning gains on the professional (e.g. pedagogical skills) and personal level (e.g. self-confidence, Birrell and Bullough 2005; King 2006). Nevertheless, it also has benefits for mentors (e.g. Dee 2012; Sorensen 2014) and learners in the classroom (e.g. Gardiner 2010; Kamens 2007). The present paper focuses on the learners' perspective.

Previous research shows both the advantages and disadvantages of student teachers' team teaching for learners in the classroom. When an additional student teacher is present in the classroom, learners receive increased support and individual attention (Birrell and Bullough 2005; Dee 2012; Kamens 2007) and there is less waiting time for assistance (Gardiner 2010). The additional teacher can help learners with difficulties or can create opportunities for differentiation (Bullough et al. 2003; Gardiner 2010; Goodnough et al. 2009; Nokes et al. 2008; Smith 2002, 2004; Sorensen 2004). The presence of multiple teachers in the classroom also provides additional observational information (e.g. on learning problems), which is helpful for the assessment of learners (Gardiner 2010; Goodnough et al. 2009; Jenkins and Veal 2002) and for class management (Birrell and Bullough 2005; Bullough et al. 2002).

During team teaching, student teachers are more likely to take pedagogical risks, knowing that a peer is close at hand to provide support. As a consequence, the lessons for the learners become richer and more varied (Bullough, Young, Birrell et al. 2003; Bullough, Young, Erickson et al. 2002; Gardiner 2010; Goodnough et al. 2009; Nokes et al. 2008; Smith 2002, 2004). Moreover, learners are confronted with multiple teaching styles (Tobin, Roth, and Zimmermann 2001) and multiple perspectives on the topics presented (Nokes et al. 2008). In addition, team teaching results in learning gains for the learners in the classroom: higher test scores (Nokes et al. 2008) and higher qualities of the learners' school work (Sorensen 2004) were reported.

Despite these advantages, previous studies also identified a disadvantage. It can be confusing for learners when they are confronted with several teachers in the classroom. For instance, multiple teachers telling pupils what to do and giving different responses to the same question may confuse them. In addition, learners may be confused about whom to go to with questions (Bullough et al. 2003; Goodnough et al. 2009; Kamens 2007).

These advantages and disadvantages for learners apply to student teachers' team teaching in general. Nevertheless, several models of team teaching exist. According to the level of collaboration between the team teaching partners, five models of team teaching can be distinguished (Baeten and Simons 2014). These models and their main characteristics are presented in Table 1.

The present paper focuses on the two models in which both team teaching partners have an equal status: sequential teaching and parallel teaching. In sequential teaching, teachers divide the learning contents or activities. They teach the same lesson/course to the same group of learners, but each teacher takes responsibility for different phases of the lesson/course (Carpenter, Crawford, and Walden 2007; Dugan and Letterman 2008). Synonyms of sequential teaching are 'alternate teaching' (Dugan and Letterman 2008), 'serial arrangement' (Carpenter, Crawford, and Walden 2007) and the 'rotational team-teaching model' (Helms, Alvis, and Willis 2005).

In parallel teaching, teachers divide the class group into subgroups and each teacher teaches the same learning contents to a subgroup (Al-Saaideh 2010; Cook and Friend 1995; Graziano and Navarette 2012; Nevin, Thousand, and Villa 2009) in order to adapt to the learners' pace, learning style, or prior achievement (Badiali and Titus 2010). The instruction is generally planned by both teachers (Cook and Friend 1995) and they may rotate between the subgroups (Thousand, Villa, and Nevin 2006). Parallel teaching is sometimes called 'split class' teaching (Al-Saaideh 2010).

Both these team teaching models, sequential and parallel teaching, can be performed by two teachers, by a teacher and a special education teacher, by two student teachers, by a student teacher and a mentor, and so on. The present study focuses on team teaching performed by student teachers.

Research comparing specific team teaching models as applied by student teachers is limited. Instead, previous research mainly focused on one team teaching model (e.g. Smith 2004) or did not specify the model on which they focused (e.g. Birrell and Bullough 2005; Goodnough et al. 2009). Previous studies mainly focused on the experiences of the student teachers. Fewer studies take into account the perspective of the mentors. Studies directly addressing the learners' perspective are scarce. Nevertheless, their perspective should be taken into account since learners are key actors in the teaching process. In case a certain team teaching model has too many disadvantages for learners, teacher educators and school policy-makers can opt to not to implement the model any longer. Alternatively, in case a team teaching model has clear advantages for learners, teacher educators and school policy-makers can decide to implement the model in the future.

Moreover, if the learners' perspective is taken into account, it is usually measured indirectly, via the perceptions of student teachers or mentors (e.g. Sorensen 2004; Smith 2004). Therefore, the present study aims to investigate the experiences with two team teaching models (i.e. sequential teaching and parallel teaching) by studying the learners' perspectives directly. Therefore, the study questions the learners themselves. The research question is: How do learners experience the sequential and the parallel teaching model? Additional questions to be answered are: What are the advantages and the disadvantages of both team teaching models as experienced by learners in the classroom? and Do learners have a preference for one model?

Methodology

Subjects

Participants were 229 pupils from different secondary schools in Flanders (Belgium). In each participating school, two Master's degree students from a one-year academic teacher education programme team-taught one or more class groups during a specific course. An overview of the participating schools ($N = 7$), the student teachers ($N = 14$), the courses, the pupils' year of study, the number of learners and the number of team-taught lessons is provided in Table 2. Learners (i.e. pupils) in schools A, B, C and D were team-taught by means of sequential teaching ($N_{Learners} = 108$). Learners in schools E, F and G were team-taught by means of parallel teaching ($N_{Learners} = 121$).

Table 2. Overview of the participants.

School	Students	Course	Year of study	$N_{Learners}$	$N_{Team\text{-}taught\ lessons}$
School A	Student 1 & 2	Human Sciences	4th year	11	3
			5th year	8	1
School B	Student 3 & 4	Human Sciences	3th year	15	2
			5th year	13	2
School C	Student 5 & 6	Human Sciences	5th year	22	4
School D	Student 7 & 8	Languages	5th year	31	1
			6th year	8	1
School E	Student 9 & 10	Human Sciences	3th year	23	4
School F	Student 11 & 12	Languages	4th year	12	2
			5th year	18	2
School G	Student 13 & 14	Biology	4th year	39	1
			5th year	18	1
			6th year	11	1

Procedure

The teacher education institute at the University of Antwerp (Belgium) prepares students who have already obtained their Master's degree to become secondary school teachers. The teaching programme constitutes of 60 European Credit Transfers. In the first semester, the university decided to apply two team teaching models (sequential teaching and parallel teaching) in a quasi-experimental design with a limited number of student teachers volunteering to participate. The 14 student teachers were randomly assigned in pairs to a secondary school. In their placement school, they all had to observe their mentor (an experienced teacher) during four lessons (1 lesson = 50'). Afterwards, each pair applied one of the team teaching models during four lessons.

In the sequential ($N_{Student\ teachers}$ = 8) and parallel ($N_{Student\ teachers}$ = 6) teaching model, both student teachers collaboratively planned the lessons. Subsequently, the lessons were given, either according to the sequential teaching model or to the parallel teaching model. Afterwards, in both models, student teachers reflected together on their teaching experiences. The mentor observed the four lessons and provided feedback after each lesson. In the case of parallel teaching, the mentor observed a part of the lesson of each student teacher.

Instruments

After the final team-taught lesson, each learner received a questionnaire about his or her experiences with the specific teaching model. This questionnaire consisted of 18 statements and three open-ended questions. The statements measured particular advantages and disadvantages retrieved from the literature (see Baeten and Simons 2014), e.g. increased support, variation and confusion. The statements were scored on a five-point Likert scale, with response categories ranging from 1 (completely disagree) to 5 (completely agree). Table 3 gives an overview of the items.

In addition to the statements, three open-ended questions had to be filled in by the learners: (1) Would you like to be taught in this way in the future? Why (not)?; (2) Give at least one advantage and one disadvantage of this teaching format and (3) Do you have any remarks about the lesson(s)?

Table 3. Results of the exploratory factor analysis (factors, factor loadings and underlying statements).

		Statement
		Because of the presence of two teachers …/
Factor	Factor loading	*Because we were taught in a small learners' group …*
Factor 1	.72	… I understood the course contents more quickly
Advantages	.68	… I paid more attention to the course
	.67	… I received support faster
	.65	… I received more (individual) attention
	.62	… I remembered more from the lesson
	.61	… I dared to ask questions more quickly
	.61	… The course was more interesting
	.60	… It was easier for me to pay attention
	.59	… The atmosphere in the classroom was more relaxed
	.49	… It was noticed more quickly that I did not understand something
Factor 2	.66	… I sometimes missed some structure in the lesson
Disadvantages	.60	… Time was unnecessarily wasted
	.51	… Learners chatted more among each other
	.47	… It was more difficult for me to pay attention

Analysis

In order to look for the underlying data structure of the statements, an exploratory factor analysis was conducted by means of SPSS Statistics 20. Principal factor analysis with oblique rotation was applied because of an expected coherence between the factors. The Kaiser–Meyer–Olkin measure (.88) and Bartlett's test of sphericity ($\chi^2(153) = 1464.17, p < .001$) verified that the data were adequate to conduct factor analysis. The number of factors was determined by the scree plot criterion. Only items that loaded significantly on a factor (≥.40) were included. Significant cross-loading items were excluded if differences between the factor loadings were smaller than .20. Two factors (Table 3) were distinguished with a proportion explained variance of 41.22: factor 1 clustered advantages (10 items, $\alpha = .87$, 32.83% explained variance) and factor 2 clustered disadvantages (4 items, $\alpha = .65$, 8.39% explained variance). For each factor, the constituting items were averaged in order to construct scale scores.

In a next step, it was investigated whether the scale scores differed between learners in sequential and parallel teaching. Since several pairs ($N = 7$) of student teachers were involved in the study, differences in the pupils' experiences with sequential and parallel teaching (advantages/disadvantages) could be due to differences related to the student teachers' pairs. To take into account the hierarchical data structure (i.e. pupils nested within pairs of student teachers), multilevel analysis was conducted by means of the linear mixed model procedure in SPSS Statistics 20.

Learners' answers to the open-ended questions were investigated through quantitative content analysis. With the help of a coding scheme, answers were classified. The development of this coding scheme was both theory- and data-driven. The coding scheme was based on advantages and disadvantages of team teaching for learners retrieved from the literature as above. New codes, based on the data, were added when relevant. The transcripts were first analysed in order to build the coding scheme. Then the coding scheme was applied to the pupils' responses with the help of the software NVivo 10. The code 'Other' comprises advantages and disadvantages mentioned by only one pupil. The number of pupils reporting an advantage or disadvantage was indicated by means of percentages. The analysis was

Table 4. Descriptive statistics of the (dis)advantages by team teaching model.

Team teaching model	*M*	SD
Sequential teaching		
Advantages	3.06	.51
Disadvantages	2.72	.75
Parallel teaching		
Advantages	3.41	.61
Disadvantages	2.22	.49

conducted by the first author. Interpretations of the data were discussed extensively with the co-author.

Results

Statistical analysis

Descriptive statistics of the scale scores for advantages and disadvantages are presented for each model separately in Table 4.

Both team teaching models were assessed rather positively. In both models, pupils scored advantages higher than disadvantages. With respect to advantages, results of the multilevel analysis showed a significant fixed effect of the team teaching model, $F(1, 6.43) = 10.26$, $p < .05$. The coefficient of the team teaching model was –.38 (SE = .12). These results showed that learners in parallel teaching experienced significantly more advantages than learners in sequential teaching. Therefore, parallel teaching was more positively assessed. In order to investigate whether differences in advantages could be due to differences between the student teacher pairs, the covariance parameter was calculated. The covariance parameter of the student teacher pair (.01) (SE = .01) was not significant ($p > .05$). This indicates that there were no significant differences in perceived advantages between the student teacher pairs. When taking into account the team teaching model, it did not matter by which student teacher pair the pupils had been taught.

As far as disadvantages are concerned, the multilevel model showed a borderline significant fixed effect of the team teaching model, $F(1, 6.54) = 4.77$, $p = .07$. The coefficient of the team teaching model was .47 (SE = .21), indicating that pupils in the sequential teaching model tend to experience more disadvantages than those in the parallel teaching model. The covariance parameter of the student teacher pair (.07) (SE = .04) was not significant ($p > .05$). Similarly to the advantages, there were no significant differences in perceived disadvantages found between the student teacher pairs. This result indicates that the pupils' perceptions of the teaching models did not depend on the student pair they belonged to.

Quantitative content analysis

The quantitative content analysis gives a more detailed view on the experiences of the learners with both team teaching models, more specifically as far as advantages and disadvantages are concerned.

Advantages

Analyses of the answers to the open-ended questions confirmed the results of the multilevel analysis. As compared to the sequential teaching model, the number of pupils reporting advantages in the parallel teaching model was higher. The type of advantages also differed slightly between the parallel and sequential teaching model.

Parallel teaching is characterised by the fact that the class group is split up. In this teaching model, the teacher works with smaller groups of learners. This characteristic resulted in high levels of concentration and involvement (47.11%), e.g.: 'You are in a smaller group, so it is easier to pay attention. Because there are fewer learners, you have to give answers more frequently. Therefore, you are more strongly involved in the lesson'. Moreover, in small groups, the atmosphere was strongly appreciated; it was considered to be fun, cosy and relaxed (45.45%). In the sequential teaching model, the learner group is not split up. Nonetheless, the advantages of high levels of concentration and involvement and good atmosphere were also reported for this model, but to a smaller extent, respectively, 14.81 and 22.22%, e.g. 'Because of the alternation between two teachers, it was easier for me to stay alert'.

In sequential teaching, the advantage most frequently reported by learners was the high level of support due to the presence of two teachers in the classroom (30.56%), e.g. 'The teachers noticed more quickly learners needing help. They could assist multiple learners at the same time'. Further, learners appreciated the variation of being taught by two teachers (25.93%). Also in parallel teaching, high levels of support and variation were reported, but to a somewhat smaller extent, respectively, 18.33 and 16.53%, e.g. 'In case a learner has a question, the teacher can provide support more quickly'.

Compared to those pupils experiencing sequential teaching, pupils receiving parallel teaching appreciated the quiet atmosphere (19.83%): 'It is more silent in the classroom'. Moreover, they reported more learning gains (11.57%). For instance, parallel teaching was considered to be helpful to understand and remember learning contents. Furthermore, learners appreciated the fact that lessons in parallel teaching processed in a fast and fluent way (5.79%). There were fewer learners who did not understand the content or asked for information and help, which increased the pace.

In contrast to pupils experiencing parallel teaching, learners in sequential teaching valued the different opinions and explanations on the learning contents (16.67%), e.g. 'You can listen to the different opinions of both teachers. Consequently, learners can more easily form their own opinion'. In addition, both teachers could complement and support each other and could exert more control, which was considered as an advantage (10.19%).

Disadvantages

As far as disadvantages are concerned, differences were also found between learners experiencing sequential and parallel teaching. For learners in sequential teaching, the presence of two teachers was considered to be confusing and complex (31.48%), e.g. 'It was too confusing to understand. They both explained the learning contents differently and, consequently, it was difficult to follow the lesson'. Learners experienced differences between the two student teachers (31.48%): 'They had two different opinions. They contradicted each other'. The latter disadvantage was also reported by a considerable amount of learners experiencing parallel teaching (9.09%). Learners in parallel teaching were concerned that the other student teacher would explain the learning contents differently or would emphasise different information in the other learners' group.

Table 5. Advantages and disadvantages for the learners in the classroom.

Sequential teaching model	Parallel teaching model
Advantages ($n = 6$)	*Advantages* ($n = 6$)
• High levels of support (30.6%) • Variation (25.9%) • *Good atmosphere* (22.2%) • Different opinions, explanations (16.7%) • *High levels of concentration and involvement* (14.8%) • *Teachers complementing and supporting each other* (10.2%)	• *High levels of concentration and involvement* (47.1%) • *Good atmosphere* (45.5%) • *Quiet atmosphere* (19.8%) • High levels of support (18.3%) • Variation (16.5%) • Learning gains (11.5%)
Disadvantages ($n = 5$)	*Disadvantages* ($n = 2$)
• Confusing, complex (31.5%) • *Differences between teachers* (31.5%) • *Low levels of concentration and involvement* (15.7%) • *Variation* (10.2%)	• *Splitting the class group* (16.5%) • *Bad atmosphere* (11.6%)

Although high levels of concentration and involvement and variation were perceived as advantages of sequential teaching, the reverse was found too, i.e. low levels of concentration and involvement (15.74%), e.g. 'When one student teacher was talking, the other student teacher was making noise or daydreaming. This distracted me.' and variation (10.19%), e.g. 'It was irritating that they constantly alternated each other and each time started to talk about something different'. Further, learners in sequential teaching disliked the fact that student teachers interrupted each other (6.48%).

Despite the advantages experienced by learners in parallel teaching, they recognised several disadvantages. They disliked the fact that the class group had to be split (16.53%). Learners were concerned that the other half of the class would see different learning contents and, thus, would be treated differently. Partly because of the splitting of the class group, learners experienced the atmosphere as bad (11.57%): 'It is more quiet, but with the whole class group, the ambience is better'. Moreover, they disliked changing classrooms (8.26%).

Due to the small learners' group and the smaller amount of questions being asked by the pupils, they reported a lack of learning gains (8.26%): 'You do not learn from other people's questions'. Further disadvantages of parallel teaching were a fast pace (8.26%) and a 'buzzy' atmosphere (7.44%). Finally, student teachers expected more input from the pupils, due to the smaller learners' group, which was experienced as a disadvantage by the learners (6.61%).

Conclusions and discussion

The present study investigated pupils' experiences with lessons team-taught by student teachers. Two team teaching models were the focus of the research, i.e. sequential teaching and parallel teaching. Both models were applied in a quasi-experimental design, involving 229 learners in secondary education. Since studies comparing different team teaching models are scarce and since the learner's perspective generally is not taken into account, this study offers new insights that can inspire teacher education institutes or schools willing to implement team teaching using the parallel or the sequential teaching model.

Both models were evaluated rather positively. Parallel teaching was appreciated slightly, but significantly more by learners than sequential teaching. Based on the quantitative and qualitative data, the study gives a more detailed insight into the advantages and

disadvantages as perceived by learners in the classroom. Table 5 gives a global overview of the elements found in this study and their importance. Elements are only included if reported by at least 10% of the pupils. Several advantages and disadvantages reported in the literature (see Baeten and Simons 2014) are confirmed in this study, but the respondents also identified additional advantages and disadvantages. The newly found advantages and disadvantages are printed in italics.

With several frequently reported advantages and a limited number of disadvantages, the parallel teaching model is clearly perceived more positively by pupils than the sequential teaching model. The results confirm advantages and disadvantages reported in the literature on team teaching. Four advantages were found (high levels of support; different opinions, explanations; higher learning gains and variation) and one disadvantage (confusing, complex).

The advantage most frequently reported by learners experiencing sequential teaching was the high level of support due to the presence of two teachers in the classroom. This advantage of team teaching also came to the fore in other studies (e.g. Birrell and Bullough 2005; Dee 2012; Gardiner 2010; Kamens 2007). Learners experiencing parallel teaching also experienced high levels of support. Nevertheless, the number of learners in parallel teaching reporting this advantage was smaller than in sequential teaching.

Learners in sequential teaching valued the different opinions and explanations on a topic, as was also the case in the study of Nokes et al. (2008). This advantage was not reported for the parallel teaching model as the teacher teaches individually in this model. Approximately a fourth of the learners in sequential teaching and a fifth of the learners in parallel teaching appreciated the variation. Since individual teaching is the main teaching practice (Bacharach, Heck, and Dahlberg 2010; Henderson, Beach, and Famiano 2009), being taught by two teachers was valued because it is different from what they were used to. Pupils also referred to this advantage by describing the lessons as richer and more varied. Due to the fact that the lessons were prepared (and given) by two student teachers, the learning contents were more interesting and the approaches more engaging, an advantage also reported in previous studies. Also splitting the classroom and being taught in small learners' groups in the parallel teaching model was experienced as different from the regular teaching practice and lead to more variation.

The advantage of higher learning gains is confirmed for both models, but more for the parallel teaching model (>10%). One disadvantage, already described in the literature (Bullough et al. 2003; Goodnough et al. 2009; Kamens 2007), is only reported for the sequential teaching model. This model is perceived as confusing and complex by a third of the learners.

The study also helped to identify new advantages and disadvantages, some of them specifically linked to one of the team teaching models. Almost half of the learners agree on the fact that parallel teaching results in high levels of concentration and involvement and a good atmosphere (cosy, relaxed). Pupils experiencing sequential teaching also reported on these advantages, but to a smaller extent. Another newly found advantage, only mentioned for sequential teaching, is teachers complementing and supporting each other.

In contrast to the literature, which showed only one main disadvantage of team teaching for learners (i.e. the fact that confusion could arise from being team-taught (Bullough et al. 2003; Goodnough et al. 2009; Kamens 2007)), the present study revealed several disadvantages of sequential and parallel teaching. In line with the literature, the presence of two teachers, as was the case in sequential teaching, was considered

confusing and complex. Although the presence of two teachers could enhance concentration and involvement, the reverse, i.e. low levels of concentration and involvement, was also found. Several learners also considered the variation in the lesson (alternating from teacher to teacher), the differences between the teachers and the fact that they interrupted each other as a disadvantage.

In parallel teaching, disadvantages mainly related to the splitting of the class group, which could result in a bad atmosphere, and to differences between teachers. Learners were concerned that both small learner groups would not see the same learning contents in the same way. Changing classrooms and a lack of learning gains were also reported as disadvantages by a considerable number of learners in parallel teaching.

In conclusion, the present study shows that team teaching, either sequential or parallel teaching, is appreciated by learners. Advantages outweigh disadvantages. Comparing both models shows the surplus value of parallel teaching for learners. Nevertheless, several disadvantages are related to parallel teaching as well. When implementing team teaching by student teachers, it is important to anticipate these disadvantages. For example, the disadvantage of differences between teachers underlines the importance of communication between both student teachers, not only during the lesson preparation, but also during evaluation and reflection. Since sequential teaching also has several important advantages, e.g. high support, good atmosphere, different opinions and explanations, it seems valuable to apply either parallel or sequential teaching or both, depending on the specific context.

The present study has its limitations. Only two models of team teaching were applied and tested, both of the equal status model. The teacher education institute involved in the study opted for these models, as they wanted to implement team teaching with beginning student teachers, in the first phase of their field experiences. The models tested seemed to suit this context most. In contrast with earlier studies, both models were clearly delineated and explained to both student teachers and their mentors.

Both models were tested in a quasi-experimental design since they were implemented in authentic class settings. This approach made it impossible to control for all possible influencing variables (e.g. class size, teaching style). Nevertheless, the question as to whether the student teacher pair to which the learners in the classroom belonged had an effect on the perceived advantages and disadvantages, was investigated, but this was not confirmed.

Only the pupils' perspective was taken into account. Before implementing specific team teaching models, the perspective of all actors involved should be considered: student teachers, mentors and learners, but also that of teacher educators, principals and policy-makers. The perspective of the learners deserves specific attention, as they are one of the key actors in the learning process. Previous studies mainly focused on student teachers and their mentors. The present study therefore broadened the existing literature on team teaching by studying the learner's point of view on two specific team teaching models. The results partly confirm earlier found advantages and disadvantages of team teaching and partly identify new advantages and disadvantages of team teaching. In education for teaching, parallel teaching is found to be a relevant teaching method because of the high levels of concentration and involvement and the good atmosphere experienced by the learners in the classroom. Nevertheless, for specific purposes (for instance in the case where high levels of support are required), sequential teaching is beneficial as well.

Disclosure statement

No potential conflict of interest was reported by the authors.

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