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Jannet J. Doppenberg [a b] , Anouke W.E.A. Bakx [a b] & Perry J. den Brok [a]

[a] Eindhoven School of Education, Eindhoven University of Technology, Eindhoven, The Netherlands

[b] Fontys University of Applied Sciences, Venlo, The Netherlands
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Collaborative teacher learning in different primary school settings

Jannet J. Doppenberg[a,b]*, Anouke W.E.A. Bakx[a,b] and Perry J. den Brok[a]

[a]Eindhoven School of Education, Eindhoven University of Technology, Eindhoven, The Netherlands; [b]Fontys University of Applied Sciences, Venlo, The Netherlands

During the last two decades there has been a growing awareness of the potentially strong role teacher collaboration can play in relation to teacher and team learning. Teachers collaborate with their colleagues in different formal and informal settings. Because most studies have focused on teacher learning in one collaborative setting or are related to a specific innovation, little is known about how teachers learn within the different collaborative settings that emerge out of their teaching work. The aim of this exploratory study was to gain deeper insight into collaborative teacher learning during regular work at primary schools. Collaborative teacher learning was investigated within multiple settings, taking into account both the undertaken learning activities by teachers and the learning outcomes. Teacher and principal perceptions were collected through semi-structured interviews that were conducted with two teachers and one principal per school, including seven primary schools. Results show that teacher learning occurred within different collaborative settings in schools, however, with different degrees of intensity and outcomes across these various settings. Thus, depending on the collaborative setting, more or less different learning activities and learning outcomes were reported by teachers and principals. The results suggest that high quality team meetings can be a powerful context for teacher learning.

Keywords: settings for learning; collaborative teacher learning; primary education; learning activities; learning outcomes

Rationale

During the last two decades there has been a growing awareness of the potentially strong role teacher collaboration can play in relation to teacher learning (Levine & Marcus, 2010; Westheimer, 2008). Collaboration with colleagues who understand the practice and the context of the school can provide a powerful learning environment that stimulates the professional development of teachers and the innovative development of schools. This collaboration can take different forms; for example, that of professional learning communities (McLaughlin & Talbert, 2006; Richardson & Placier, 2001; Stoll, Bolam, McMahon, Wallace & Thomas, 2006; Stoll & Louis, 2007; Vescio, Ross & Adams, 2008; Westheimer, 2008). Collaborative teacher learning takes place in different settings that vary from formal settings like team meetings to informal settings like hallway encounters (Borko, 2004; Little, 1990, 2003). Unfortunately, relatively little is known about the question regarding how different settings in which teachers collaborate are comparable in terms of the

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*Corresponding author. Email: jannet.doppenberg@fontys.nl

learning activities they evoke with colleagues and in terms of the outcomes that are a result of this learning. This can be attributed to the fact that most studies on this topic focus on teacher learning within one specific collaborative setting that is often related to one specific topic or innovation (in the school). Such learning is not always embedded in teachers' regular teaching tasks; and, as a consequence, does not provide a comprehensive overview of collaborative teacher learning (Little, 2003; Orland-Barak & Tillema, 2006). Moreover, because teacher learning appeared hard to observe in these studies and because studies often focused on (workplace) conditions for learning, relatively little is known about what teacher learning in collaboration actually looks like during everyday work (Borko, 2004; Hindin, Morocco, Mott & Aguila, 2007; Little, 2003). In particular, this is true for the context of primary schools, since most contemporary studies were conducted in secondary schools (e.g. Meirink, Meijer, & Verloop, 2007). A complicating factor in this kind of studies seems further that learning outcomes vary for individual teachers who collaborate with each other and participate in the same activities (Hindin et al., 2007).

The aim of the present study is to gain a more comprehensive overview of collaborative teacher learning in the context of primary schools. In order to achieve this aim, this study investigates collaborative teacher learning within multiple collaborative settings, taking into account both the undertaken learning activities by teachers and the learning outcomes (see the 'Theoretical framework' section). Interviews seem to be a promising strategy, because we aim to look across different settings. For this reason, in this study the focus is on participants' perceptions with respect to collaborative teacher learning within different settings. It is expected that a more complete picture emerges if teachers as well as principals are interviewed. Including principals' perceptions seems logical, since the literature suggests principals play an important role in facilitating structures and conditions that contribute to the development of collaborative knowledge and skills, in shaping the content for teachers' individual and shared learning and in creating a culture that implies responsibility, mutual accountability and collaboration (Elmore, 2002; Frost & Durant, 2003; Hargreaves & Fink, 2003; Leithwood et al., 2004; Westheimer, 2008). Sometimes principals participate in collaborative teacher learning processes for the improvement of teaching practices and pupil outcomes (King, 2002; McLaughlin & Talbert, 2006). Finally, principals have a good overview of the whole school. It should be noted, however, that the focus of this manuscript is not to detect differences between teachers' and principals' perceptions; merely, they are seen as complementary sources of information for the same phenomenon (Mertens, 1998).

In the following sections, we first conceptualise collaborative teacher learning followed by an elaboration of the settings in which this learning can occur as well as the learning activities and learning outcomes involved. After that, the research questions of this study will be presented, as well as the methodology and the results. The conclusion and discussion, forms the end of this contribution.

Theoretical framework

Collaborative teacher learning

In this study, collaborative teacher learning is defined as undertaking (a series of) learning activities by teachers in collaboration with colleagues, resulting in a change

in cognition and/or behaviour at the individual and/or group level (Meirink et al., 2007; Putnam & Borko, 2000; Shuell, 1996). In this study, it is assumed that the learning activities undertaken may be conscious or unconscious, and that these are performed in a social context. In addition, research has shown that series of activities rather than singular activities result in learning outcomes (Meirink et al., 2007). A learning outcome is defined in this study as a change in teacher cognition (knowledge, beliefs, attitudes and emotion; cf. Shuell, 1996; Vermunt & Verloop, 1999) and/or behaviour. Cognition and behaviour are distinguished because change in cognition does not automatically lead to change in behaviour and vice versa (Meirink et al., 2007; Richardson & Placier, 2001). Moreover, changes in cognition and/or behaviour may be different for separate individuals, but through social processes a group of teachers as a whole can develop new and deeper shared understandings (cognitions) or shared actions (behaviour) as well (Crossan, Lane & White, 1999; Nonaka & Takeuchi, 1995).

What and how teachers learn is further affected by the context in which teachers learn (Putnam & Borko, 2000; Wenger, McDermott & Snyder, 2002). Therefore, in this study *collaborative settings* play an important role. The collaborative settings refer to different groups or structures within schools or across schools within which teachers collaborate with colleagues, possibly leading to collaborative teacher learning (Wenger et al., 2002).

Collaborative settings

Teachers can learn in a range of settings, often even without planning to do so (Van Eekelen, Boshuizen, & Vermunt, 2006; Zwart, Wubbels, Bergen, & Bolhuis, 2007). Traditionally, teachers particularly carry out their work individually and rarely afford themselves an opportunity for learning (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005; Vescio et al., 2008; Westheimer, 2008). When teachers collaborate with each other, learning can take place as well. However, in most previous studies teacher collaboration was studied in settings outside the classroom (Little, 2002; Levine & Marcus, 2010). Contrary to this trend, Bakkenes, Vermunt, and Wubbels (2009) compared teacher learning at the workplace in three different collaborative settings within the context of an educational innovation (i.e. teaching for active learning) in secondary schools. They distinguished two formally organised settings in order to promote teacher learning: peer-coaching (1), including the observation of lessons and coaching of each other; and collaborative project groups (2), in which interdisciplinary teachers collaborated with each other; along with an informal setting (3) with no specific actions in order to promote teacher learning. The results of the study indicated that qualitatively better learning activities and learning outcomes were found within formal organised collaborative settings compared to the informal setting. Within the formal organised setting, teachers reported more frequently the (learning) activity 'experimenting' and the (learning) outcome 'new ideas' in comparison to the informal setting, within which teachers more frequently reported the (learning) activity 'considering own practices' and the (learning) outcomes 'experience negative emotions' and 'continue current practices' (Bakkenes et al., 2009).

Recently, Levine and Marcus (2010) compared different collaborative meetings of one teacher team in relation to teacher learning. They concluded that the structure of the collaborative meeting and the intended focus of meetings influenced the quantity and nature of teachers' opportunities for learning. In a review on effective

professional learning communities for teachers, Vescio et al. (2008) concluded that the focus of different meetings or groups should be student learning (see also James, Dunning, Connolly & Elliott, 2007).

Other studies that investigated teacher learning within collaborative settings, for example, focused upon inquiry study groups (Orland-Barak & Tillema, 2006; Tillema & Van der Westhuizen, 2006), meetings (Little, 2003; Orland-Barak, 2006), subject departments (Horn, 2007; Visscher & Witziers, 2004) or cross-disciplinary groups (Shank, 2006). These studies each investigated teacher learning within *one* collaborative setting related to a specific topic or content of collaboration (like a specific innovation or teaching methods) and/or focused upon factors influencing teacher learning within one collaborative setting. As a consequence, little can be inferred from these studies as to what degree different settings evoked different learning activities and different learning outcomes. Yet, the fact that each study reported different activities, foci and outcomes seems to suggest differences might be present. Moreover, these studies often concerned secondary school teachers.

To get a more comprehensive understanding of collaborative teacher learning, the present study includes different collaborative settings and it studies teacher learning in the context of primary schools (Borko, 2004; Little, 2003). Since prior studies provide no particular argument for a typology of different settings, it was decided to let these settings emerge from the data itself.

Learning activities and learning outcomes

Teacher learning in the workplace occurs when teachers are performing learning activities within the school context (Kwakman, 2003). During the last decade, some studies have been conducted on teachers' learning activities in the workplace (e.g. Henze, 2006; Kwakman, 2003; Lohman & Woolf, 2001; Meirink et al., 2007; Van Eekelen et al., 2006; Zwart, Wubbels, Bolhuis & Bergen, 2008). Kwakman (2003) distinguishes in her study four (types of) learning activities: (1) reading (e.g. books or information); (2) experimenting (e.g. trying out new teaching methods); (3) reflecting (e.g. thinking about one's own behaviour) and (4) collaboration (e.g. exchanging materials or discussing).

In our study, the focus is on *collaborative* teacher learning. Literature analysis of studies on teachers' learning activities when they are deployed in a 'group' context shows that the forms of collaboration distinguished by Little (1990) are generally accepted and used to typify learning activities in other studies (e.g. Henze, 2006; Kwakman, 2003), even though the descriptions or subcategories distinguished may vary somewhat. Little (1990) distinguishes forms of teachers' collaboration on the basis of levels of interdependency. The move from one level to another level involves increased demands for collective autonomy and increased teacher-to-teacher initiatives and, as a result, increased levels of interdependency. This means for instance, that collegial relations with low interdependency like 'storytelling and scanning' are characterised by interactions of teachers who acknowledge and tolerate the individual preferences or styles of others and who take sporadic and informal initiatives for exchange. Collegial relations with higher interdependency, like 'joint work' are, for instance, characterised by collaboration among teachers who make independent choices guided by collective action, who share responsibility for the work of teaching, who take decisions collectively and who take initiatives to affect students' learning. The distinguished levels by Little (1990) seem particularly

useful for the present study because her levels relate learning activities to learning outcomes. It is argued that learning activities with high levels of interdependency should lead to qualitatively better learning outcomes than activities with low levels of interdependency.

Different types of learning outcomes can be typified as well. Simons and Ruijters (2001) distinguish learning outcomes in the light of learning in social interaction on the one hand and collective learning on the other: learning in social interaction refers to group activities leading to *individual* learning outcomes, while collective learning concerns group activities resulting in *shared* learning outcomes. Activities undertaken in collaboration with others do not automatically lead to collective learning outcomes. It is even possible that some teachers learn a lot, while others learn almost nothing, or that teachers learn in opposite directions (Hindin et al., 2007). Looking at prior studies on teacher learning in collaboration, it seems that most of these studies did not explicitly distinguish between individual and collective outcomes, or – and this was more often the case – they focused at just one of these levels (either the individual or the collective). Zwart et al. (2008), for example, categorised seven *individual* learning outcomes as a result of learning activities in the context of peer-coaching (a context that can be considered collective in nature): (1) new ideas, conceptions or beliefs; (2) confirmed ideas, conceptions or beliefs; (3) increased awareness; (4) intention to change behavioural repertoire; (5) changed ideas of self; (6) new ideas and intentions to change behaviour and (7) confirmed ideas and intentions to change behaviour. Bolhuis and Simons (1999), on the other hand, argued that collaborative teacher learning should result in a communal language in which shared approaches, knowledge and skills are expressed and cultivated (all of which are only collective outcomes). From the literature, it appears that presently no consensus exists with regard to a typology of learning outcomes from collaborative teacher learning. A great part of this field still seems relatively unexplored. In our study, a first attempt in this exploration is made without claiming to be comprehensive.

Research questions

The aim of this exploratory study is to obtain a better understanding of collaborative teacher learning at primary schools in different collaborative settings. Accordingly, the main research question is: *How do primary education teachers and principals perceive teachers' learning in different collaborative settings at the workplace*? This question can be divided into three parts: (1) In what settings do primary teachers and principals report that teachers learn in collaboration with each other? (2) What learning activities are reported by teachers and principals to be undertaken by primary teachers in these settings? (3) What individual and group learning outcomes in these settings are reported by teachers and principals?

Method

Participants

To obtain the sample for this study, primary schools that were linked to the teacher education department of the first author were contacted. The schools were contacted based on impressions provided by teacher educators supervising students working at these schools, suggesting that these schools had a strong learning oriented

culture. After principals agreed upon participation, they asked teachers to participate in the interviews on a voluntary basis. To get a better understanding of all processes in the school, one teacher teaching in the lower years and one teacher teaching in the upper years was selected.

In total, 14 teachers and seven principals from seven primary schools in the south-eastern part of the Netherlands participated in this study. Most of the participating teachers were female (11 of the 14). The average age of the teachers was 36 and they had an average of 15 years of teaching experience with a minimum of four years. Together, the teachers represented all groups from 4 to 13 years old. Two of the seven principals were female, with an average of 27 years of experience in primary education. The average age of the principals was 52 years old.

Instrumentation and procedure

Interviews were carried out to obtain insight into teachers' and principals' perceptions of collaborative teacher learning during everyday work. Given the above described undecided status of research with respect to this topic, an open and more qualitative approach was deemed most appropriate. It was hoped that the interviews helped gain a more comprehensive overview of the collaborative learning activities of teachers and the learning outcomes, as a result of these activities, within different collaborative settings. It should be acknowledged that the present study did not have the intention to provide a complete overview of all possible settings, learning activities and learning outcomes. Also, it is acknowledged that, while useful, teacher and principal perceptions may vary from the actual practices that can be observed in the school context.

A semi-structured interview guideline was developed that was based on the theoretical concepts described above. It contained questions about (1) teacher learning with colleagues in different collaborative settings; (2) collaborative learning activities and (3) learning outcomes (as a result of the undertaken activities). Regarding the first topic, respondents were asked, in general, *when* they collaborated with one or more colleagues and whether they thought they were learning in these situations or not. Next, more specific questions were asked about collaborative learning activities and learning outcomes within these different settings. The interview guideline was piloted with one teacher who was not involved in the later part of the study.

Data analysis

All interviews were audio-taped and fully transcribed. These transcriptions were analysed in three steps. In the *first* step, fragments were selected and connected to relevant theoretical propositions concerning: (1) collaborative settings; (2) collaborative learning activities and (3) learning outcomes (for details on this method, see Yin, 2003; Miles & Huberman, 1994). Next, a matrix was constructed with the collaborative settings distinguished on one side and collaborative learning activities and learning outcomes on the other. Original (summarised) text fragments were inserted in the cells of the matrix as illustrations as well in order to construct categories and definitions and to enhance interpretation (Mertens, 1998; Smaling & Maso, 1990). This matrix was constructed in order to understand the relation between collaborative settings, collaborative learning activities and learning outcomes (Miles & Huberman, 1994).

In the *second* step, a set of categories was created from the matrix for the collaborative settings, the learning activities and learning outcomes. The categories were created using the theoretical distinctions described above and added to the categories emerging from the data (grounded theory approach; see, e.g. Corbin & Strauss, 2008). The final set of categories was developed together with two senior researchers to ensure the integrity of the framework, its variables and the links between them. The final set of categories and their definitions were based on consensus reached by these three researchers.

In the next section an overview of the settings as well as their descriptions is presented (see Table 1). The data suggested that settings could be distinguished based on three characteristics. The first characteristic concerned the (number of) persons involved in the setting. A second characterisation concerned the degree to which the setting emerged repeatedly over the course of time. The third characteristic concerned the aim of the (organised) setting; which, for example, could range from getting inspiration from colleagues to improving the learning outcomes of pupils.

For the learning activities four general categories, based on the levels of interdependency and collegiality, could be recognised from the data. These categories were (1) *storytelling and scanning*; (2) *aid and assistance*; (3) *sharing and* (4) *joint work* and they resembled those of Little (1990). However, from the data, a fifth (additional) category emerged: *collegial support*. Separate, more specific learning activities that were found in the data could be placed under one of these five categories. In total, 12 different types of specific learning activities (subcategories) were distinguished, partially from literature (Henze, 2006; Kwakman, 2003; Meirink et al., 2007; Zwart et al., 2008) and partially from the data itself. These learning activities, subactivities and their descriptions can be found in the following section (see Table 2).

The learning outcomes, finally, were divided into two major groups: individual and group learning outcomes (see also Simons & Ruijters, 2001). Eleven subcategories could be distinguished under these two main categories based again on both the literature (Bolhuis & Simons, 1999; Zwart et al., 2008) and the data itself. The learning outcomes and their descriptions can be found in the next section (see Table 4). Moreover, in the following section the categories of collaborative settings, learning activities and learning outcomes will be described in more detail.

In the *third* step, the results were summarised in a frequency overview matrix (Miles & Huberman, 1994) in order to detect major trends and connections within the data. In the presented frequency tables, the frequency of one collaborative setting (see Table 1) and one learning activity or learning outcome within a collaborative setting (see Tables 3 and 5) is the maximum of the sum of the respondents ($n = 21$).

Results

In the section below, we first provide an overview of the reported collaborative settings. Next, the numbers of respondents that reported the different settings will be discussed. Thereafter, an overview of learning activities will be provided, followed by frequencies of learning activities reported per collaborative setting with particular attention to those activities that were more frequently or less frequently reported

Table 1. Overview of the categories of reported collaborative settings within collaborative teacher learning occurs.

Collaborative setting	Characteristics			Reported by		
	Persons involved	Frequency	Aim	sl	t	Total
Board of schools	Teachers of different schools within a school board	2–4 times a year	To talk about subjects of interest and/or to learn from each other	3	7	10
School team	All teachers of the school	1–2 times a month	To improve education, to develop a learning continuity pathway and a shared vision, to share knowledge, ideas and experiences and to find solutions for problems at the school level	7	14	21
Sub team	Teachers of the school divided in groups according to the grade levels in which they are teaching	1–2 times a month	To improve education, to develop a learning continuity pathway and a shared vision, to share knowledge, ideas and experiences and to find solutions for problems at the sub team level	5	11	16
Working group	Teachers (2–4) of the school working at the same project	Differ from one or 2–10 times a year	To develop or organise things that contribute to the improvement of education or to projects and activities for children	5	5	10
Class	Teachers of the school working with the same children or adjacent grade levels	Once a week to daily	To discuss children that are taught jointly as well as the joint methods with the aim to help children and to adjust teaching methods	2	11	13
Informal	Ad hoc (spontaneous) groups of teachers within the school	Once a week to daily	Without planning or aim or an individual aim to find solutions for problems or to share experiences	4	11	15
Collegial	Two teachers of the school	1–4 times a year	To help another teacher and/or to learn from another teacher	6	10	16

Note: sl = principals ($n = 7$); t = teachers ($n = 14$).

within the different settings. In a similar way, the learning outcomes will be presented next. Moreover, in all paragraphs the categories or trends within the frequency tables will be illustrated with citations.[1]

Collaborative settings for teacher learning

Reported collaborative settings

Table 1 presents an overview of the collaborative settings that includes their characteristics in terms of number of persons involved, the frequency of occurrence, and the aim, as well as the number of respondents that reported this collaborative setting as a setting for learning. While the teachers and principals differed somewhat with regard to the collaborative settings they reported, six of the seven categories were reported by at least one of the respondents of each school ($n = 7$). An exception was the category *board of schools*, which was not reported by two schools.

The category *board of schools* is located outside the school (involves other schools or a network of schools under the same board) and the other six categories are located within the school. The collaborative settings *school team* or *sub team* are nearly identical, with (only) a difference in the number of persons involved and the aim of the setting. The aim of improvement of education (or school development) appeared to be related to different collaborative settings (see *school team*, *sub team* and *working group*). However, even though not always reported explicitly as an aim, in the interviews indications were found that the improvement of education could be linked to all collaborative settings. Furthermore, the aims of the *informal* and *collegial* collaborative settings seemed more linked to individual teachers. Moreover, the collaborative settings *class* and *informal* occurred most often. The setting *class* occurred very often because it was seen as a (formal) planned as well as an (informal) unplanned context.

Frequency of reported collaborative settings

A closer inspection of Table 1 shows that the collaborative setting *school team* was reported by all teachers and principals of all schools. Hence, this was the most common setting found in the interviews. The principals also frequently reported the *collegial* setting as a collaborative context for learning, whereas teachers most often mentioned *sub team*, *class* and *informal* setting as collaborative contexts for learning. The quote of teacher Mary illustrates two frequently reported settings as a first reaction on the question, about learning when she collaborated with colleagues:

> Mary (16–36)
> When I look at grade level three, which my colleague and I teach, you discuss things with each other and so you are learning from each other, like ideas or about the problems people have. I think I learn in the team meetings, when you are listening to each other in a group and talking about something.

Teacher Mary refers in the first sentence to a setting in which she collaborates with her parallel colleague (class). In the second sentence Mary refers to the collaborative setting team meeting (school team). This quote also illustrates that the manner in which teachers talk about collaborative settings: these often were specified in terms of implicit (or general) learning activities and/or learning outcomes.

Learning activities

Reported learning activities

The collaborative settings formed the context and starting point for teachers and principals to talk about learning activities undertaken. Table 2 presents the catego-

Table 2. Overview of categories of teacher learning activities in collaboration with colleagues.

Learning activities within collaborative settings		
Categories	Subcategories	Description
Storytelling and scanning	Listening	Listening to information, experiences, ideas and teaching methods
	Informing	Informing about the (state of) work (in progress) of a group
	Observing	Observing colleagues' teaching methods
Aid and assistance	Asking questions	Asking questions or help
	Giving feedback	Giving or receiving feedback
	Organising	Organising school projects
Sharing	Exchanging	Exchanging and/or discussing information (knowledge), experiences, ideas and teaching methods
Joint work	Evaluating	Series of activities consisting of: • making a plan to improve school development • evaluating the plan • adapting the plan
	Developing	Series of activities consisting of: • becoming absorbed in a subject of school development • developing a subject of school development
	Intervision	series of activities consisting of: • asking help • asking questions • giving or receiving feedback
Collegial support	Collegial visitation	Series of activities consisting of: • asking questions or help • observing colleagues' teaching methods • giving or receiving feedback
	Coaching	Series of activities consisting of: • asking questions and/or help • giving or receiving feedback

ries (and subcategories) of learning activities reported by the teachers and the principals.

In the interviews, the categories *storytelling and scanning*, *aid and assistance and sharing* referred to singular activities, whereas the categories *joint work* and *collegial support* referred to compound (series of) activities; namely, a number of activities reported by respondent as a whole logically linked to each other. The quote of principal Ben illustrates, such a compound learning activity, intervision:

Ben (12–50)

With intervision we have a more formal way of working. Someone brings in a problem and everybody may ask extra questions as a result of the problem, questions for clarification. Next, you get a round in which solutions are brought forward and finally you get a round in which the one who 'owned' the problem can say, that solution is useful or that does not match with myself or that I already tried etc.

In this quote principal Ben explains that, in his school, a formal way of working was used for intervision, comparable with a protocol that contains different rounds of activities.

As can be seen in Table 2, the learning activity *sharing* contains the subcategory *exchanging*. Different forms of exchanging were mentioned by the respondents: information, experiences, ideas and teaching methods.

Frequencies of reported learning activities per collaborative setting

Table 3 reports the number of respondents that reported a learning activity within a particular collaborative setting.

Within the collaborative settings, *school team* and *sub team*, more often learning activities were mentioned; additionally, a wider variety of different learning activities were reported compared to the other collaborative settings.

The learning activity *exchanging* was reported most often by teachers and principals across all settings, followed by the activities *listening* and *evaluating*. The learning activities *exchanging* and *feedback* were reported at least once by principals or teachers within six of the seven collaborative settings. Furthermore, the learning activities *observing*, *informing*, *intervision*, *coaching and collegial visitation* were reported less often by teachers and principals. Moreover, *coaching* and *collegial visitation* were activities that were only reported within the collaborative setting *collegial*, in which no other activities were reported. Hence, the quote of principal Ben above represented a scarcely mentioned learning activity. The following quote of teacher Frank illustrates the learning activity *exchanging*, which was reported most often in our sample:

Frank (1–153)

During a team meeting, you talk about things with each other. At some point, one colleague says: I do that, and I find that, and I like this way of working and then another colleague says: I like this way of working. You may differ in these things.

As can be seen in the quote, exchanging can involve persons' attitudes and impressions of each other, without describing a reciprocal reaction in return.

Table 3. Frequencies of learning activities reported by teachers and principals per collaborative setting.

Learning activities		Collaborative settings							Total
Categories	Subcategories	Board of schools	School team	Sub team	Working group	Class	Informal	Collegial	
Storytelling and scanning	Listening	7	13	4		1	2		27
	Observing	3			1	2			6
	Informing		9	1	1				10
Aid and assistance	Asking questions	4	4	2		4	6		20
	Giving feedback	1	6	2	2	3	3		17
	Organising		2	4	6	3			15
Sharing	Exchanging	9	15	15	3	13	14		69
Joint work	Evaluating	1	14	9	5	4			33
	Developing		1	2	8	1			12
	Intervision		3	5					8
Collegial support	Coaching							7	7
	Collegial visitation							11	11
Total activities per setting		25	67	44	25	31	25	18	286

Note: Learning activities reported by teachers and principals ($n = 21$).

Learning outcomes

Reported learning outcomes

In the interviews several learning outcomes were reported by teachers and princi-
pals. Table 4 provides an overview of these learning outcomes.

As Table 4 shows, some of the learning outcomes at the individual level and at
the group level were more or less similar, such as the individual learning outcome
knowledge and the group learning outcome *shared knowledge*. Other learning out-
comes were unique for one level, like *recognition*, which is a learning outcome that
was only reported at the individual level, or, the *improvement of culture*, which was
a learning outcome that only was reported at the group level. Both these outcomes
did not have an equivalent mentioned at the other level. Surprisingly, a change in
behaviour as a learning outcome was never mentioned in the interviews. On the
other hand, learning outcomes sometimes showed implicit references to (intended)
changes in behaviour (see, e.g. the learning activity *improvement of education*).

Frequencies of reported learning outcomes per collaborative setting

Table 5 reports the number of respondents that reported a learning outcome within
a particular collaborative setting.

Within the collaborative settings *school team* and *sub team*, learning outcomes
were reported most often by teachers and principals. Also, all categories of distin-
guished learning outcomes were reported for these two collaborative settings. Fur-
thermore, within the *informal* collaborative setting, learning outcomes were not
often reported by teachers and principals.

The learning outcomes *ideas*, *knowledge*, *knowledge of colleagues* and *shared
targets* were frequently reported by teachers and principals across all settings. The

Table 4. Overview of categories of learning outcomes as a result of collaboration with
colleagues.

Learning outcomes within collaborative settings		
Categories	Subcategories	Description
Individual learning outcomes	Recognition	Recognition of problems and confirmed ideas
	Awareness	Increased awareness (of self)
	Ideas	New idea
	Knowledge	New knowledge
	Change models	Change of models (conceptions or beliefs)
Group learning outcomes	Knowledge of colleagues	Knowledge of colleagues knowledge, ideas and teaching methods
	Shared knowledge	Colleagues have shared knowledge
	Shared targets	Colleagues have shared targets and visions
	Shared responsibility	Colleagues have feeling of shared responsibility
	Improvement of culture	Improvement of culture of the school
	Improvement of education	Improvement of education of the school (teachers using better and same teaching methods)

Table 5. Frequencies of learning outcomes reported by teachers and principals per collaborative setting.

Learning outcomes		Collaborative settings							Total
Categories	Subcategories	Board of schools	School team	Sub team	Working group	Class	Informal	Collegial	
Individual	Recognition		1	2					3
	Awareness	1	4	2	1	1	1	3	13
	Ideas	5	6	4		2		5	22
	Knowledge	3	4	3	3	3		3	19
	Change models		1	1		1	1	1	5
Group	Knowledge of colleagues	3	5	6		3	1	4	22
	Shared knowledge	1	5	4		1			11
	Shared targets		10	3	1	5		2	21
	Shared responsibility		2	3	2	2		1	10
	Improvement of culture		4	5	2	1	1	3	16
	Improvement of education		4	1	4	2			11
Total learning outcomes per collaborative setting		13	46	34	13	21	4	22	153

Note: Learning outcomes reported by teachers and principals ($n = 21$).

learning outcomes *recognition* and *change models* were not frequently reported by teachers and principals. The following quote of teacher Mandy illustrates within the *class* collaborative setting, the learning outcome *knowledge of colleagues* (often reported) and the learning outcome *change models* (scarcely reported):

> Mandy (4–123)
>
> If you are working well together you will meet each other and you also discuss things with each other. And in the manner of that you can also learn from each other, I think. How is the other thinking about a certain subject and why is he thinking this, why does he look at a subject a certain way? For example, if I say, next we will only going to practice subtractions and my duo-partner says: I do not like it, because … From that, I can learn. In the beginning, I did not look at it that way. It is also the same with vision on the development of children. How a child develops, I have really learned this from my duo-partner. I look at a child that develops too slowly and I have an opinion about this. But, at that moment it is nice that another opinion is put against it. And that can be important for you, to look at things also in a different way.

In the quote, Mandy describes that she learns what her colleague's opinion is and why this is his opinion (knowledge of colleagues). Moreover, she also describes that the opinion of the colleague changed her own way of looking at things (change models).

Conclusion and discussion

The aim of this study was to gain a more comprehensive overview of collaborative teacher learning in primary schools as perceived by teachers and principals. In order to achieve this aim, the different types of collaborative settings were first examined. Next, for each collaborative setting, the learning activities and learning outcomes reported were studied.

The specific character of the reported collaborative settings in which teacher learning was perceived to occur appeared to differ in terms of the number of persons involved in the setting, the frequency that the setting emerged repeatedly over the course of time and the (intended) aim of the setting. Seven collaborative settings were found: *group of schools*, *school team*, *sub team*, *working group*, *class*, an *informal* setting and a *collegial* setting. In the perception of teachers and principals, *all* collaborative settings discerned were to some degree associated with teacher learning. This finding aligns with literature suggesting that teachers can learn in all kinds of settings (Borko, 2004; Little, 2003; Van Eekelen et al., 2006; Zwart et al., 2007). However, the most common reported setting for learning was *school team*, in which all teachers of a school are involved at the same time. This can possibly be explained by the fact that, within these team meetings, innovations and school development are important topics of the collaboration. Decisions on these important issues are taken and discussed within the context of the school team.

The learning activities reported by teachers and principals were sorted into five different categories; *storytelling and scanning*, *aid and assistance*, *sharing*, *joint work* and *collegial support*. The first four categories were based on those of Little (1990) and could thus be distinguished based on the levels of interdependency. We identified a new category, *collegial support*, which is a unique category. This category refers to two specific learning activities (collegial visitation and coaching), which could not be found within other settings. Moreover, this type of activity represented an asymmetric collegial relation between colleagues because the aim

appears that one teacher is specifically helping or helped by another colleague. In the literature, other forms, such as peer-coaching, can be found. *Collegial support* activities with such symmetric relations were not reported by the respondents in this study (e.g. Zwart et al., 2007). The asymmetric relation in this study can possibly be explained through the fact that collegial visits and coaching of each other is not common yet, as well as by the fact that, within these activities a special trained teacher is often involved.

The learning activities *exchanging*, *listening* and *evaluating* were activities that were often reported across different settings. These activities thus seemed to be important learning activities, especially within the collaborative setting *school team* and *sub team*. Possibly, these activities emerged from the meeting agendas of teams or sub teams (which both have similar aims). In general, it seems that we can conclude that, depending upon the collaborative settings some learning activities were or were not undertaken by teachers.

The learning outcomes reported could be categorised in *individual learning outcomes* and *group learning outcomes*. Within both categories of learning outcomes changes in cognition were reported. This differed from, for example, the study by Zwart et al. (2008), who distinguished intentions to change behaviour and changes in behaviour as well. In the present study, (intended) changes in behaviour mentioned remained implicit. This is not that surprising, because changes in behaviour were not reported as often as changes in cognition in prior studies (see, e.g. Meirink et al., 2007). Moreover, the learning outcomes within the categories individual or group can be more or less identical as well as more unique.

The learning outcomes getting *ideas*, *knowledge of colleagues* and *shared targets* were learning outcomes that were reported frequently across many different settings. In contrast, *recognition* and *change models* were not reported frequently across different settings. The collaborative settings *school team* and *sub team* evoked most reported learning outcomes, as well as the largest variety in learning outcomes.

Overall, examination of learning activities and learning outcomes within different collaborative settings showed that, within the collaborative settings *school team* and *sub team*, teachers and principals reported learning activities and learning outcomes most often. Besides, within these collaborative settings teachers and principals reported the largest variety of different learning activities and learning outcomes. In total, it can be concluded that, depending on the collaborative setting, more or less different and more or less frequent learning activities and learning outcomes were perceived by teachers and principals. When comparing settings, teachers and principals reported within the collaborative setting *collegial* more learning outcomes in proportion to learning activities. A possible explanation is that this setting often indirectly has the aim to improve practices of a teacher (a learning aim). For example, the activity of coaching can be initiated to help a teacher who experiences difficulties with a new teaching method that has been implemented in the school. Within the *informal* collaborative setting, teachers reported more learning activities in proportion to learning outcomes. This is not surprising because these learning activities often do not have an (intended) aim (see also Vescio et al., 2008).

Limitations

Despite the reporting of some interesting (and new) results, the method employed had its limitations. First, the data collection was limited to conducting interviews

regarding teacher and principal perceptions. Talking about learning activities and learning outcomes proved difficult for teachers, who seemed not to be used to consider their learning with colleagues from an analytic perspective and may have felt uncertain about reporting learning through making mistakes (Berings, Doornbos, & Simons, 2006). Talking about learning outcomes for the collective group was especially difficult for respondents. They said it felt inappropriate to talk for their colleagues, because they were not sure. Moreover, some learning activities and learning outcomes may have occurred outside the conscious awareness of the respondents (Eraut, 2004). It might be thinkable that the learning activities and learning outcomes reported do not represent a complete record of all possible learning activities and learning outcomes that occurred. Thus, it can be valuable to also observe teacher learning in subsequent studies.

This study focused uniquely on learning activities undertaken in collaboration with colleagues, however; teachers do not only learn from these activities, but they also learn from activities undertaken individually. It seems reasonable that these individual activities also contribute to the learning outcomes reported in this study, because individual activities as well as group activities undertaken by teachers may both be part of a series of activities resulting in learning outcomes. Furthermore, in this study the learning outcomes were presented as embedded in a collaborative setting. Theoretically, however, it can be argued that learning activities that were reported in different collaborative settings could lead to a result reported within these settings. Moreover, an activity can be experienced as a learning activity by one teacher, but this does not mean that other involved teachers experience the same activity as a learning activity. Learning activities can also lead to learning outcomes that differ per teacher. In all, the situation may be much more complex than our initial results show. In future research it can be interesting to investigate what activities by which of the involved teachers is experienced as a learning activity, and if the experienced learning outcomes differ per teacher.

In addition, in this study it was not possible to fully determine what learning activities led to certain learning outcomes because learning activities and learning outcomes were examined separately within the different collaborative settings. Hence, in future research, explicit relations between learning activities and learning outcomes should be investigated. Finally, the sample of respondents was quite small and differences between teachers and principals were not especially investigated. To validate the results found in this study, additional empirical research is needed, preferably in a larger sample of teachers and principals and specifically investigating differences in perceptions between both groups.

Few empirical studies have examined collaborative teacher learning on a large scale and across different settings. Future research investigating collaborative teacher learning should generalise the results found in small-scale studies. For the present study, the interview results, for example, can be investigated on a larger scale by using a questionnaire.

Implications

The findings in the present study have some theoretical implications. The findings showed that teacher learning occurred within various different collaborative settings in schools, but also with different degrees of intensity and effects across these various settings. For researchers this means it is relevant to either study learning across

different settings within one study to obtain a coherent and complete picture or to realise that when learning is studied in *one* collaborative setting this only provides a partial picture and that not all settings are equally 'rich' in this respect. As such, the findings also show a new dimension in collaborative learning, namely setting.

Most prior studies on teacher learning in collaboration did not explicitly distinguish between individual and group learning outcomes but focused on just one of these main categories. Our findings suggest that both learning outcomes should be taken into account when collaborative teacher learning is studied. However, the findings also suggest that further research is necessary with regard to a typology of learning outcomes as teachers and principals spoke in rather general terms.

Based on our results, we recommend that principals support and stimulate teacher learning in collaboration with colleagues, particularly during meetings of teams or sub teams. Facilitating the collaboration of teachers in formally organised settings seems to enhance the quality and variety of learning processes of individual and groups of teachers. Stimulating teachers to become aware of their learning within collaborative settings might help them undertake more and different learning activities in collaboration with colleagues. Moreover, it might also help to encourage teachers to enter into a dialogue in which teachers reflect on their own and shared practices with the aim to improve teaching practices and pupils learning.

Moreover, the results suggest that it may be also valuable to facilitate and organise the learning activities *collegial visitation* and *coaching*. These learning activities do not take place frequently in practice, however, teachers and principals perceived them to be very effective for learning.

Note

1. Names of respondents (and schools) were replaced by aliases to ensure confidentiality.

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