

# Exploring the relationship between professional learning community characteristics in departments, teachers' professional development, and leadership

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## Abstract

Teachers' professional development (PD) is important to improve the quality of education. Professional learning communities (PLCs) are considered as promising contexts for teachers' PD. This study explores PLC characteristics (i.e. collective responsibility and reflective dialogue) in secondary school departments and the role of these characteristics for teachers' PD. It also examines how leadership facilitates these PLC characteristics and teachers' PD. Based on teachers' perceptions of the strength of PLC characteristics in their department, two high-perceived and two low-perceived PLC departments were selected for a qualitative exploratory case study research. Data were collected from 21 interviews with teachers and their department heads and principals from the four departments to explore how PLC characteristics in the high-perceived PLC departments differed from those in the low-perceived PLC departments. The results indicate that high-perceived PLC departments have potential for teachers' PD. Teachers in these departments have a collective and subject-related PD. Furthermore, the leadership practices of principals and department heads differed across high- and low-perceived PLC departments. Principals and department heads in high-perceived PLC departments stimulate teachers' collaboration and PD more dynamically.

**Keywords:** departments; professional learning communities (PLCs); principal leadership; departmental leadership

the quality of education (Darling-Hammond, Chung Wei, Alethea, Richardson, & Orphanos, 2009). The teaching profession is gradually becoming more and more complex. For instance, not only do teachers have to focus on student performance in traditional areas, such as literacy and mathematics, but they are also responsible for student performance in new areas, such as social skills and ICT (Hargreaves, 2000). As it is not possible for teachers to acquire all the necessary knowledge and skills during their teacher education (Darling-Hammond et al., 2009), their career-long PD has become an area of interest in teacher education literature (Cochran-Smith, 2016). Whereas earlier models of teachers' career-long PD largely concerned activities unconnected to their work, more attention has recently been paid to the role that schools must play in this regard (Imants & van Veen, 2010). As such, professional learning communities (PLCs) have been considered as promising contexts for improving the teaching practice as well as teachers' PD (Darling-Hammond et al., 2009). PLCs aim to create an environment in which teachers' PD is valued, encouraged, and supported (Hargreaves, 1994; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). In secondary schools, departments are considered as important units for organising teaching and learning (Busher & Harris, 1999; Visscher & Witziers, 2004). To support secondary school teachers' PD, departments should therefore operate as PLCs (Lomos, 2012; Stoll et al., 2006). However, research on departmental PLCs is scarce (Vescio, Ross, & Adams, 2008). Limited research has been carried out on the differences between departmental PLCs and how such differences can affect teachers' PD. It is therefore important to further our understanding of what departmental PLCs are and how they can improve teachers' PD. Recent research examining the factors that facilitate

## 1 Introduction

Over the past decade, increasing attention has been paid to the importance of teachers' professional development (PD) for improving

the development of PLCs indicates that leadership is key to the development and improvement of PLCs (e.g. Stoll et al., 2006; Vanblaere & Devos, 2016, 2017), and teachers' PD, which concerns leadership at all levels (i.e. both at the school and departmental level) (Darling-Hammond & Richardson, 2009; Stoll et al., 2006). In terms of how PLCs and teachers' PD can be facilitated in schools, previous studies have only focused on the leadership of the principal (Stoll et al., 2006). However, other staff members can also carry out important leadership practices (Busher & Harris, 1999). For example, it has been shown that department heads can contribute to the performance of departments in the same way that principals contribute to the performance of schools (Busher & Harris, 1999; Vanblaere & Devos, 2017). Moreover, Busher and Harris (1999) and Ghamrawi (2010) suggest that departmental leadership is potentially more important than principal leadership for the development and improvement of departments. In this study, we examine the relationship between teachers' perceptions of departmental PLCs and how teachers' PD evolves. We also study the role that principal and departmental leadership play in facilitating this process.

## 2 Theoretical framework

### 2.1 Teachers' professional development (PD)

Given the major changes taking place in the teaching profession over the past decades, increasing emphasis is given to teachers' involvement in their career-long learning and development in schools (Darling-Hammond et al., 2009; van Veen, Zwart, Meirink, & Verloop, 2010). Teachers' PD can be defined as a lifelong learning and development process, in which teachers' behaviour is influenced by their experiences and interaction with the professional environment (Kelchtermans, 1993, 2000). As such, teachers' PD is no longer situated only at the individual level but is defined as a process where teachers can learn with and from each other (Little, 2002). As explained in the introduction, teachers' PD is one of the main goals of PLCs. Teachers who

participate in a PLC can strengthen their knowledge and skills, such as pedagogical knowledge, content knowledge, design skills, and professional skills (e.g. collaboration), attitudes, and teaching practice (van Veen et al., 2010).

### 2.2 The development and improvement of PLC characteristics in departments

Secondary school teaching and learning is organised within departments, which can differ in organisational form. Firstly, departments can differ in terms of the subject matter being taught (i.e. mathematics vs. literacy) (Siskin, 1997). Secondly, departments can vary in grade composition (i.e. grade-bound departments consisting of teachers that teach the same subject in the same grade (i.e. years 1 and 2) vs. cross-grade departments consisting of all teachers that teach the same subject in the school (all years)). Describing departments as communities can create an environment for teachers to exchange ideas and experiences and to learn from and with each other (Vanblaere & Devos, 2017). As such, departments have potential as collective platforms for professional learning (Lomos, Hofman, & Bosker, 2011) This is in line with the idea that departments can take a crucial position in teachers' PD (Vanblaere & Devos, 2017). More specifically, Little (2002) and Lomos, Hofman, and Bosker (2011) state that departments should operate as PLCs to support teachers' PD. Recent studies have shown that PLCs serve as powerful tools for supporting teacher growth and teaching practice (Desimone, 2009; Geijsel, Slegers, Stoel, & Krüger, 2009; Little, 2002; McLaughlin & Talbert, 2001; Wahlstrom & Louis, 2008). A PLC is defined as a group of teachers who discuss and critically question their teaching practice in an ongoing, reflective, collaborative, and inclusive way, and takes professional development and an orientation on learning into account (Stoll et al., 2006). The multidimensionality of PLCs has been widely recognised in the literature (Lomos, 2012). However, few studies have considered separate characteristics when studying PLCs (Wahlstrom & Louis, 2008). Such characteristics include: (1) *Collective responsibility:*

this means that colleagues create a common sense of responsibility for all students' learning. Teachers discuss different manners of instruction with colleagues in order to stimulate students' intellectual development (Stoll et al., 2006; Wahlstrom & Louis, 2008). (2) *Reflective dialogue*: this includes in-depth conversations with colleagues about educational issues, such as instruction and curriculum. Teachers reflect on their practice, create new ideas, and try to implement those new ideas. This leads to a deeper understanding and changes in teachers' teaching practice (Stoll et al., 2006; Wahlstrom & Louis, 2008). (3) *Deprivatized practice*: this implies that teachers share and define their practice openly. Teachers will use strategies such as observing each other, giving and receiving feedback, and co-teaching (Stoll et al., 2006; Wahlstrom & Louis, 2008).

### 2.3 Principal leadership

Principals play a crucial role in developing and improving PLCs and teachers' PD (Stoll et al., 2006). In this context, two important leadership styles are discussed in the educational literature: (1) transformational leadership and (2) instructional leadership (Hallinger, 2003). Transformational leaders can enhance cooperation processes, such as teacher participation in PLCs (Geijsel et al., 2009; Slegers, Geijsel, & van den Berg, 2002). For example, they allocate time for teachers to meet and work together (Youngs & King, 2002), thus reducing teacher isolation and increasing their commitment to PLCs (Pounder, 1999). In this way, transformational leaders can indirectly influence teachers' PD. Research on the contribution of instructional leadership to PLCs is not plentiful on the one hand and has produced mixed findings on the other (McLaughlin & Talbert, 2007). In general, instructional leadership focuses on the core business of education: instruction, curriculum, and student performance (Hallinger, 2003). As such, instructional leaders can directly influence teachers' PD, as they can supervise performance, enhance content knowledge, and provide instructional feedback (i.e. knowledge of the content as well as the teaching and learning approach of a sub-

ject) (Hallinger, 2003; Tuytens, 2012). However, assuming an instructional leadership style would be challenging for secondary school principals (Tuytens, 2012), as it requires them to have expert knowledge of all subjects being taught (Lochmiller, 2016; Stein & Nelson, 2003). Notwithstanding their possible lack in subject knowledge, they do have the expertise to provide feedback concerning teachers' general tasks and performance (Ilgen, Fisher, & Taylor, 1979), for instance teachers' classroom management and their teamwork processes. This seems to be essential for improving teachers' learning, development, and teaching practice (Ilgen et al., 1979; Stronge & Tucker, 2003; Tang & Chow, 2007). For example, the feedback theory of Ilgen e.a. (1979) illustrates the importance of feedback from the principal for teachers' PD by revealing that teachers will only respond to feedback that they perceive as meaningful and useful.

### 2.4 Departmental leadership

Department heads are crucial for the smooth functioning of departments in secondary schools (Busher & Harris, 1999; Visscher & Witziers, 2004). According to Ghamrawi (2010), department heads are far more important for the development and improvement of departments than principals. Department heads can be considered as 'middle leaders' or teachers who obtain a formal position to execute several leadership practices that can contribute to (1) teachers' participation and (2) teachers' PD in their department (Busher & Harris, 1999; Struyve, Meredith, & Gielen, 2014; Vanblaere & Devos, 2017). Numerous studies have emphasised the role of department heads in creating a collaborative culture and a sense of collective responsibility, while stimulating reflective dialogues between teachers within departments (Busher & Harris, 1999; Ghamrawi, 2010; Little, 2002; Vanblaere & Devos, 2017). Research shows that merely bringing together teachers in a learning community is not enough to bring them to learning (Little, 2002). Department heads will have to support the necessary learning processes of the teachers (Schelfhout, Bruggeman, Bruyninckx, 2015). For instance,

department heads can encourage teachers to exchange ideas, discuss teaching practices, and develop teaching materials and approaches together (Schelfhout, Bruggeman, & Bruninckx, 2015), and thus aim at improving student performance (Wenner & Campbell, 2016). Indeed, Poultney (2007) and Busher and Harris (1999) state that department heads are responsible for the quality of teaching and learning in their department. They can monitor and facilitate teachers' PD (Shiu & Chrispeels, 2003; Weller, 2001), for instance, by informing teachers of PD activities, sharing innovations in the subject, and assisting (beginning) teachers (Dinham, 2007; Vanblaere & Devos, 2017). Moreover, this support must be sufficiently subject-specific in learning communities that are linked to a specific curriculum (e.g. subject departments) (Schelfhout, Bruggeman, & Bruyninckx, 2015). These different tasks show that a department head can play an important role in both teachers' learning and students' learning. As such, these tasks of the department head are in line with the goals of PLCs. In sum, previous studies have recognised that department heads play a pivotal role in the functioning of departments in secondary schools. However, little research has been conducted into how department heads can contribute to the development and improvement of PLC characteristics in their department and teachers' PD (Vanblaere & Devos, 2017). This study examines how the leadership practices of the department head are related to PLC characteristics in departments and teachers' PD.

### 3. Purpose of the study

The present study aims to further our understanding of what drives PLCs, or, more concretely, in what way the attitudes and behaviour of teachers regarding PLC characteristics can differ in departments. It also aims to clarify the consequences of these differences for teachers' PD. An understanding of how leadership facilitates PLC characteristics in departments and teachers' PD is essential to understanding teachers' PD in secondary

schools (Vanblaere & Devos, 2017). Hence, this study also explores how principal and departmental leadership are related to PLC characteristics in departments and teachers' PD. The following research questions have been formulated and will be answered by means of qualitative exploratory case study research:

1. What are the differences in the attitudes and behaviour of teachers as regards PLC characteristics across departments?
2. How are differences in PLC characteristics across departments related to teachers' PD?
- 3a. How are differences in principal leadership across departments related to PLC characteristics in departments and teachers' PD?
- 3b. How are differences in departmental leadership across departments related to PLC characteristics in departments and teachers' PD?

## 4. Method

### 4.1 Research context

This article reports on an exploratory case study research carried out in secondary school departments of mathematics, French, and General Studies<sup>1</sup>. Based on subjects that are taught in all years and in which multiple teachers within the school are employed, departments were selected. French is one of the few subjects in Flemish (Belgian) education that meets these requirements, besides mathematics. However, in Flanders, students in vocational secondary education only take mathematics in the context of General Studies. Hence, this study also includes departments and teachers of General Studies.

### 4.2 Case selection

The case selection of departments for this exploratory case study research was based on a previous quantitative online teacher survey in 83 departments in 31 Flemish secondary schools on teachers' perceptions of the strength of PLC characteristics in their department. A total of 345 teachers completed the questionnaire, including 255 (73.9%)

female and 65 (18.8%) male teachers. The average teaching experience was 15.06 years ( $SD=10.34$ ). There was missing data of 25 teachers in terms of demographics.

To measure teachers' perceptions of the strength of PLC characteristics in their department, three subscales from Wahlstrom and Louis's (2008) 'Teachers' Professional Community Index' were included in the questionnaire. The subscales measured the three PLC characteristics that are central to this study: (1) collective responsibility, (2) reflective dialogue, and (3) deprivatized practice (Lomos, 2012). (1) collective responsibility was measured with three items (e.g. "Teachers in my department feel responsible for helping each other improve their instruction"). (2) Reflective dialogue was measured with five items (e.g. "How often in this school year have you had conversations with colleagues from your department about what helps students learn best?"). (3) Deprivatized practice was measured with three items (e.g. "How often in this school year have you had colleagues from your department observe your classroom?"). All items were scored on a five-point Likert scale. The subscale for collective responsibility ranged from 1 (strongly disagree) to 5 (strongly agree). For reflective dialogue and deprivatized practice, the subscales ranged from 1 (never) to 5 (very often).

When assessing the descriptive statistics of the three subscales measuring the three PLC characteristics, the mean scores of the subscales showed that teachers feel collectively responsible for student learning in their department ( $M=3.93$ ;  $SD=.61$ ) and occasionally discuss educational issues with their department colleagues ( $M=3.32$ ;  $SD=.72$ ). However, the mean score for deprivatized practice was low ( $M=1.46$ ;  $SD=.51$ ), which indicates that deprivatized practice seldom occurs in this sample. Moreover, whereas our reliability analyses indicated that collective responsibility ( $\alpha=.70$ ) and reflective dialogue ( $\alpha=.79$ ) were reliable constructs, the reliability of deprivatized practice was low ( $\alpha=.56$ ). After careful consideration, deprivatized practice

was removed from further analyses. Following Vanblaere and Devos (2017), the fit of the two-factor model of PLC characteristics with collective responsibility and reflective dialogue was good ( $\chi^2=31.41$ ,  $df=18$ ,  $p=.03$ ;  $CFI=.98$ ;  $TLI=.96$ ;  $RMSEA=.05$ ;  $SRMR=.04$ ).

Subsequently, to select departments for the exploratory case study research, a mean score for each of the 83 departments was calculated, based on teachers' individual perceptions of collective responsibility and reflective dialogue in their department, and then the 83 departments were ranked. All mean scores ranged on a five-point Likert scale from 1 (low score) to 5 (high score).

Next, two departments were selected among those with the highest values as a mean score (further referred to as high-perceived PLC departments) and two departments among those with the lowest values as a mean score (further referred to as low-perceived PLC departments). The high-perceived PLC departments were labelled HIGH A and HIGH B, while the low-perceived PLC departments were labelled LOW C and LOW D. In addition, variety in the selected departments in terms of subject matter (mathematics vs. French vs. General Studies) and grade composition (grade-bound vs. cross-grade) was ensured. Table 1 shows the total mean of the sample of the quantitative online teacher survey. In addition, it provides details on the four selected departments, such as their mean score, ranking in the total sample of the quantitative online teacher survey, subject matter, and grade composition.

#### 4.3 Data collection

So as to collect the data for the present exploratory case study research, semi-structured interviews ( $n=21$ ) with at least three teachers ( $n=13$ ), the department head ( $n=4$ ), and the principal ( $n=4$ ) per department ( $n=4$ ) were conducted. Table 2 shows how many participants per case were interviewed and displays the demographics of each participant.

#### 4.4 Instrument and data analysis

An interview protocol was constructed to investigate the research questions, which

Table 1

Quantitative data (2015): total mean of the sample and the department mean score (standard deviation), ranking in total sample, subject matter, and grade composition of the four selected departments

	Total mean of the sample (SD) (n=370)	High-perceived PLC departments		Low-perceived PLC departments	
		HIGH A	HIGH B	LOW C	LOW D
Department mean score (collective responsibility and reflective dialogue)	3.63 (0.36)	3.89 (0.40)	3.84 (0.52)	3.45 (0.43)	3.32 (0.65)
Ranking in total sample		16/83	21/83	61/83	67/83
Subject matter		French	General Studies	Mathematics	Mathematics
Grade composition		Grade-bound Second Grade	Cross-grade	Cross-grade	Cross-grade

Table 2

Demographics of participants (n=21)

Department	Position	Years of experience	Gender
HIGH A	School principal	Missing	Male
	Department head	27	Female
	Teacher	8	Female
	Teacher	8	Male
	Teacher	30	Male
	Teacher	5	Female
HIGH B	School principal	Missing	Male
	Department head	22	Female
	Teacher	5	Female
	Teacher	Missing	Female
	Teacher	5	Female
LOW C	School principal	Missing	Female
	Department head	27	Female
	Teacher	12	Female
	Teacher	7	Female
	Teacher	14	Female
LOW D	School principal	31	Female
	Department head	20	Female
	Teacher	13	Female
	Teacher	8	Female
	Teacher	7	Male

focused on collective responsibility and reflective dialogue as PLC characteristics, teachers' PD, principal leadership, and departmental leadership (see Appendix A for the interview protocol). Each interview took, on average, about one hour.

All interviews were recorded and transcribed verbatim and produced 286 text pages of raw data. All interview transcripts were analysed with a coding scheme (see Appendix B) derived from the theoretical framework and research questions. The interview transcripts were analysed using within- and cross-case analyses (Miles & Huberman, 1994). Firstly, in the within-case analysis, each interview transcript was coded as a single case, and each unit of meaning was given a code. These codes included four broad categories, namely (1) PLC characteristics, (2) teachers' PD, (3) principal leadership, and (4) departmental leadership. Next, the interview transcripts were openly coded for emerging codes (i.e. inductive coding), so as to refine the broad categories and create subcategories. For example, in the category PLC characteristics, the subcategories general collaboration, collective responsibility, and reflective dialogue were distinguished. The second category included subcategories such as "what did the respondents learn?" and "from whom did the respondents learn?" The third category was refined into, for example, the subcategories leadership of the principal and feedback from the principal. Finally, the fourth category was divided in tasks of the department head and expectations regarding the department head as possible subcategories. Secondly, a cross-case analysis of all interviews from one department was conducted. Thirdly, a cross-case analysis in which the four departments were compared with each other was performed. Finally, overall findings were generated and NVivo 11 software was used to organise the analyses. Regarding the internal validity (Creswell & Miller, 2000), the first author coded all interviews and a second encoder, who was not familiar with the study, coded 4 of the 21 interviews, which is in accordance with the standard of about 20% (Miles & Huberman, 1994). The second encoder was trained to

grasp the meaning of the coding scheme. The intercoder-reliability was .80, which is in line with the standard of .80 of Miles and Huberman (1994). Moreover, the authors discussed interpretations and findings until consensus was reached. Furthermore, a cross-case analysis to verify whether the answers of all participants within the same department were in agreement was conducted, which was true for all departments. Such triangulation of viewpoints helps to validate responses from different cases (Miles & Huberman, 1994).

## 5. Results

The present exploratory case study research selected departments based on differences in teachers' perceptions of the strength of PLC characteristics (i.e. collective responsibility and reflective dialogue) in their department. Below, the differences between two departments with a high presence of PLC characteristics (high-perceived PLC departments) and two departments with a low presence of PLC characteristics (low-perceived PLC departments) are presented. More specifically, the differences in the attitudes and behaviour of teachers regarding PLC characteristics across departments (RQ1) are outlined. Secondly, the relationship between the PLC characteristics and teachers' PD across departments (RQ2) is described. Finally, the role of principal and departmental leadership for the PLC characteristics and teachers' PD across departments (RQ3) is discussed. The main findings are summarised in Table 3.

### 5.1 The attitudes and behaviour of teachers regarding PLC characteristics

For the first research question, focusing on the differences in the attitudes and behaviour of teachers regarding PLC characteristics in high-perceived PLC departments compared to low-perceived PLC departments, the teachers in both the high- and low-perceived PLC departments experience a collective responsibility for students' well-being. However, the teachers in the high-perceived PLC departments also feel collectively responsible for all students' learning.

*We all feel responsible for the students. We have the students' files that we can read, but if there are specific problems or issues related to our subject, we discuss them with each other* (Teacher HIGH B).

Most of the teachers in the low-perceived PLC departments only feel responsible for their own students' learning.

*I do not concern myself with my colleague's students* (Teacher LOW C).

Secondly, all participating teachers in both the high- and low-perceived PLC departments reported that they engage in discussions about their work. In general, these discussions remain at a superficial level in the low-perceived PLC departments and are not spread throughout the department or school year, while the opposite is true for the high-perceived PLC departments. The teachers in the high-perceived PLC departments engage in more profound reflective dialogues about their subject matter and didactics, for example, dialogues about attainment targets and curriculum goals.

*We agree about the learning content and that happens in dialogue* (Teacher HIGH A).

*It should make no difference in which class and by which teacher a student is taught* (Teacher HIGH A).

In addition, the reflective dialogues of all teachers in the high-perceived PLC departments go beyond merely discussing teaching practices. They work on teaching materials collaboratively, and they use the same teaching materials and teaching approaches.

*We make PowerPoint presentations together for each topic* (Teacher HIGH B).

*We use the jointly developed copies and teaching materials* (Teacher HIGH B).

Moreover, most teachers in the high-perceived PLC departments have continuous reflective dialogues throughout the school year, and with the entire department.

*We are constantly working together. We cannot do anything alone. Everything needs to be discussed* (Teacher HIGH A).

*I usually work together with everyone from my department* (Teacher HIGH A).

In contrast, most dialogues in the low-perceived PLC departments are limited to

basic discussions about practical arrangements, such as agreements on exams and applying an equal standard of instruction.

*We reach agreements on the type of exam questions we should ask* (Teacher LOW C).

*We talk to each other to provide the same standard of instruction* (Department head LOW D).

Furthermore, most of the teachers in the low-perceived PLC departments merely exchange teaching materials or teaching approaches.

*We give things to each other like tests and exercises, but everyone uses what they want* (Teacher LOW C).

Moreover, the teachers in the low-perceived PLC departments mainly have discussions during certain periods in the school year, with a limited number of colleagues.

*We mainly work together at the beginning of the school year to coordinate and start everything up* (Teacher LOW C).

*I usually work together with teachers who are in the same years and provide the same packages of mathematics* (Teacher LOW D).

Finally, most teachers in the low-perceived PLC departments work individually.

*We operate independently in mathematics* (Teacher LOW C).

## 5.2 Teachers' PD

For the second research question, concerning how departmental differences in PLC characteristics (i.e. collective responsibility and reflective dialogue) are related to teachers' PD, all teachers in the high-perceived PLC departments tend to learn with and from their department colleagues. They find dialogues in their department valuable for their PD. For example, department colleagues motivate each other to enhance their expertise, participate together in PD activities, and work together for their PD.

*By exchanging experiences with colleagues and motivating each other to constantly try out new things, we professionally develop as teachers* (Teacher HIGH A).

*By working together, we get new ideas or new approaches that we might never have imagined. The way my colleague does it*



encourages me to do it too (Teacher HIGH A).

*Everyone has different insights; if you bring them together, we can save time and learn from each other (Teacher HIGH B).*

Furthermore, most teachers in the high-perceived PLC departments mentioned multiple outcomes resulting from working together in their department. For example, they gain new ideas, insight, and instructional strategies from their colleagues and apply them to their teaching practice. This has led to collective changes in teaching practices for most teachers in the high-perceived PLC departments.

*We are constantly trying to change our teaching practice to continue to stimulate our students. It is commonly agreed to be in the same line and apply things in the same way (Teacher HIGH A).*

*I have received some tips and tricks from my colleagues that I certainly want to apply (Teacher HIGH A).*

*I try to put into practice what I learn from my colleagues (Teacher HIGH B).*

*Teachers should at least discuss innovations and try them out in their teaching practice (Principal HIGH B).*

Moreover, most teachers in the high-perceived PLC departments have also learned about general pedagogical and educational issues.

*I have learned how to deal with students with learning difficulties (Teacher HIGH B).*

*I have recently learned something about education legislation because that changes constantly (Teacher HIGH A).*

In contrast, only a few teachers in the low-perceived PLC departments stated that participation in departments adds value to their PD. They specified that their learning occurs by coincidence and that they find it difficult to describe what they have learned from their colleagues.

*I learned more at university than from my department colleagues (Teacher LOW C).*

*I have probably learned something, but I do not immediately know what exactly (Teacher LOW D).*

In addition, most teachers' PD in the low-perceived PLC departments is related to student discipline and classroom management

rather than to their subject.

*Students are much more assertive now, and this affects my classroom management (Department head LOW C).*

*I have learned that I should be stricter (Teacher LOW D).*

Finally, a limited number of teachers in the low-perceived PLC departments have experimented and changed their teaching practice.

*My teaching practice is comparable to previous years because I felt no need to change things (Teacher LOW D).*

### 5.3 Principal leadership

Research question 3a concerns how principal leadership is perceived by teachers, the department head, and the principal himself/herself across departments and how this is related to PLC characteristics in departments and teachers' PD.

*The role of principal leadership for PLC characteristics in departments*

In the high-perceived PLC departments, the principals encourage their teachers to participate in their department. For example, the principals of the high-perceived PLC departments encourage their teachers to engage in dialogues, both grade-bound and cross-grade as well as formal and informal.

*Not only is the agreement in subject matter within each year important, but also the agreement in subject matter over the years. We want to see a flow in the consecutive years (Principal HIGH B).*

Furthermore, they conduct leadership practices that are important for a collaborative culture. For example, they look at the willingness of teachers to participate in departments when selecting and assigning them, they actively search for parallel colleagues, they are often present at department meetings, and they organise team-building sessions and workshops to promote a sense of belonging in the team.

*The principal is careful about choosing his teachers. He chooses teachers that work together, take initiative, and motivate others, and so he automatically encourages working together (Teacher HIGH B).*

*It is an important sign that the principal is present at the department meetings (Teacher HIGH A).*

*There are many events at the school. This ensures that people see each other quite often, communicate, and work together (Teacher HIGH A).*

In addition, participation in departments that is stimulated by the principal is supplemented by teachers' initiatives in the high-perceived PLC departments.

*The principal gives us the space for projects if we make suggestions (Teacher HIGH B).*

*We are constantly expected to work together on projects and to be committed to the same goal (Teacher HIGH A).*

In contrast, principals in the low-perceived PLC departments only intervene when problems occur in the department.

*If there are no problems, the principal does not attend the department meetings. She assumes that we are doing well (Teacher LOW C).*

In addition, they only pay attention to formal department meetings, and the teachers are not encouraged or required to work together outside those formal department meetings.

*For a mandatory meeting, we cannot be absent. We should always have a valid reason for being absent; otherwise, we will have a problem (Teacher LOW D).*

*The department meetings take place three times a year. If teachers want to work together in between, this is done on their own initiative, but this is not mandatory (Teacher LOW D).*

*The role of principal leadership for teachers' PD*

Regarding the role of principal leadership for teachers' PD, since instructional feedback or subject-specific feedback from the principal is difficult in both low-perceived and high-perceived PLC departments, general feedback from the principal is essential.

*I understand that the principal does not have the time to always observe everyone and attend classes. It is difficult to give [subject-specific] feedback to such a large team (Teacher HIGH A).*

*I do not give a lot of subject-specific feedback, because sometimes I hardly know the subject matter (Principal LOW D).*

The difference between low-perceived and high-perceived PLC departments that we want to highlight, is that for instructional feedback or subject-specific feedback, the principals in the high-perceived PLC departments encourage their teachers to rely on their subject colleagues or make use of external pedagogical counsellors.

*We will not give feedback unless we know the subject itself. We rather go to the service for pedagogical counselling or look for subject-specific help within the department (Principal HIGH A).*

*For subject-specific questions and feedback, I should rely on my department colleagues (Teacher HIGH A).*

In addition, in the high-perceived PLC departments, the principals pay a great deal of attention to general feedback, such as communicating with colleagues, parents and students, collaboration, and projects or initiatives of teachers. In other words, they actively and regularly evaluate their teachers' functioning at the school.

*The principal gives feedback on how you work within the school, how you function, how you see your future here at school, what you would like to change, what you like and so on (Teacher HIGH A).*

Also, in the high-perceived PLC departments, teachers' PD is supported and stimulated by the principal. For example, they encourage their teachers to follow external PD activities.

*Teachers should follow at least two PD activities a year, a general-pedagogical and a subject-specific one. Most teachers meet this expectation. If not, they are reminded (Principal HIGH A).*

*The principal provides a framework in which the teachers can be professional. Teachers receive e-mails with suggestions and reminders of external PD activities (Teacher HIGH B).*

Moreover, they also offer internal PD activities.

*We offer teachers the possibility to attend internal PD activities. For example, we invite*

speakers to the school (Principal HIGH A).

Additionally, sometimes they require all their teachers to attend certain PD activities.

*Every teacher should attend some PD activities. For example, a course about learning difficulties* (Department head HIGH B).

Finally, all teachers feel appreciated by their principal in the high-perceived PLC departments.

*The principal gives no subject-specific feedback, but he appreciates us and he always knows what we are doing, so I am satisfied* (Teacher HIGH A).

In contrast, subject-specific feedback from the principal is scarce in the low-perceived PLC departments. In addition, most of the teachers in the low-perceived PLC departments are less likely to ask for feedback from their colleagues. Hence, they do not receive any feedback from their school.

*I can turn to colleagues for feedback, but I feel no need to do so* (Teacher LOW C).

Furthermore, in the low-perceived PLC departments, teachers' PD is less stimulated by the principal and is instead seen as an individual responsibility of the teacher.

*The principal leaves it [teachers' PD] up to us* (Teacher LOW C).

Finally, principals in low-perceived PLC departments are more resistant to external PD activities.

*The principal prefers that only one teacher participates in an external PD to reduce costs* (Teacher LOW C).

*Teachers should only go to useful PD activities and this in their free time; otherwise, time that could be invested in lessons is lost* (Principal LOW C).

#### 5.4 Departmental leadership

Research question 3b explores how teachers, the department head himself/herself, and the principal across departments perceive departmental leadership and how this is related to PLC characteristics in departments and teachers' PD.

*The role of departmental leadership for PLC characteristics in departments*

As to stimulate PLC characteristics in

departments, the department heads in the high-perceived PLC departments perform leadership practices that differ from the department heads in the low-perceived PLC departments.

The department heads in the high-perceived PLC departments have a supporting and motivating role for teachers' participation in their department. For example, they encourage their teachers to discuss the content and teaching of their subject.

*The department head is responsible for motivating the department members to work together* (Teacher HIGH A).

*The department head makes a difference in the department by communicating to the different grades. If there is no communication, there is no cooperation and no learning line across the different grades* (Teacher HIGH B).

Secondly, they are considered as collective problem solvers. For example, the department head will discuss a solution together with the department members.

*If we have problems, we need to contact the department head and then she will organise a department meeting* (Teacher HIGH A).

*We are encouraged by the department head to find a solution to a problem together* (Teacher HIGH A).

In contrast, the department heads of the low-perceived PLC departments have a more supervisory or controlling role for teachers' participation in their department. They follow up on agreements and evaluate the department members at the request of the principal.

*The department head addresses colleagues when they do something wrong or do not want to work together, and she checks whether agreements are respected* (Teacher LOW D).

Furthermore, they are considered as individual problem solvers. When a department member has a problem, the department head solves the problem alone and provides an answer to the teacher. There is no consultation about issues nor questions.

*If there are problems, someone will tell the department head and she will solve it, without any consultation* (Teacher LOW C).

*The role of departmental leadership for teachers' PD*

The department heads of both the high- and low-perceived PLC departments inform teachers about external PD activities. In addition, in the high-perceived PLC departments, the department heads monitor the PD of the department members. For example, they stimulate collective reflection and discussions on teachers' PD.

*All the information that the school gets about PD activities will be forwarded to the department. Everyone gets the offer, but the department head is responsible for monitoring*

*teachers' PD (Teacher HIGH A).*

Furthermore, in the high-perceived PLC departments, the department heads are considered as subject matter experts.

*The department head has knowledge and expertise in the learning content of all grades (Teacher HIGH A).*

Finally, in the high-perceived PLC departments, the department heads translate policy decisions made by the principal and external educational stakeholders to the department (i.e. changes in the curriculum).

*The department head must track and pass on the curriculum changes (Teacher HIGH A).*

Table 3

*Summary of the findings: differences between low- and high-perceived PLC departments*

	Low-perceived PLC departments	High-perceived PLC departments
<b>Collective responsibility (RQ1)</b>	<ul style="list-style-type: none"> <li>- Students' well-being</li> <li>- Own students' learning</li> </ul>	<ul style="list-style-type: none"> <li>- Students' well-being</li> <li>- All students' learning</li> </ul>
<b>Reflective dialogue (RQ1)</b>	<ul style="list-style-type: none"> <li>- Practical matters</li> <li>- Merely exchanging teaching materials and approaches</li> <li>- During certain periods in the school year</li> <li>- With a limited number of colleagues or work independently</li> </ul>	<ul style="list-style-type: none"> <li>- Subject content</li> <li>- Subject didactics</li> <li>- Developing together and using the same teaching materials and approaches</li> <li>- Continuous</li> <li>- With the entire department</li> </ul>
<b>Teachers' PD (RQ2)</b>	<ul style="list-style-type: none"> <li>- Individual PD</li> <li>- Learning occurs by coincidence</li> <li>- Teachers have difficulties describing what they have learned</li> <li>- Student discipline and classroom management</li> </ul>	<ul style="list-style-type: none"> <li>- Collective PD</li> <li>- Subject-related PD</li> <li>- General pedagogical and educational issues</li> <li>- Changes in teachers' teaching practice</li> <li>- Shared teaching practice</li> </ul>
<b>Principal leadership (RQ3a)</b>	<ul style="list-style-type: none"> <li>- Encouraging only mandatory department meetings</li> <li>- Only intervene in case of problems</li> <li>- Teachers are not expected to collaborate outside the mandatory department meetings</li> <li>- Resistance to external PD</li> </ul>	<ul style="list-style-type: none"> <li>- Encouraging grade-bound, cross-grade, formal, and informal dialogues</li> <li>- Focus on willingness to participate in departments when selecting and assigning teachers</li> <li>- Actively searching for parallel colleagues</li> <li>- Attending formal department meetings</li> <li>- Encouraging teacher initiatives</li> <li>- Encouraging (collective) PD</li> <li>- Teachers feel appreciated</li> <li>- More attention to feedback</li> </ul>
<b>Departmental leadership (RQ3b)</b>	<ul style="list-style-type: none"> <li>- Supervising or controlling on behalf of the principal</li> <li>- Individual problem solvers</li> <li>- Inform about PD</li> </ul>	<ul style="list-style-type: none"> <li>- Supporting or motivating teachers</li> <li>- Collective problem solvers</li> <li>- Subject matter experts</li> <li>- Monitoring PD</li> </ul>

In low-perceived PLC departments, in contrast, the tasks of department heads are limited to simply informing colleagues about PD activities. In addition, most teachers in the low-perceived PLC departments are less satisfied with their department head.

*The department head will not take up all her duties, so we will have to set up a turnaround system to carry out certain tasks of her (Teacher LOW C).*

*When I was a beginning teacher at the school, I thought that the department head was someone else (Teacher LOW D).*

*The department head is one of the colleagues who may be more enthusiastic; she is a good teacher, but she lacks the power to be a good department head (Teacher LOW D).*

## 6. Discussion

This exploratory case study research has distinguished between two groups of departments based on teachers' perceptions of the strength of two PLC characteristics (i.e. collective responsibility and reflective dialogue) in their department. As to understand how high-perceived PLC departments operate in secondary schools and how they differ from low-perceived PLC departments, the attitudes and behaviour of teachers as regards PLC characteristics in their department and the resulting PD of teachers were documented. The importance of principal and departmental leadership for PLC characteristics and teachers' PD was identified. Regarding the first research question, in high-perceived PLC departments teachers experience a high level of collective responsibility for students' well-being and learning. Moreover, they have ongoing reflective dialogues with all members of their department. They also frequently develop learning content, teaching materials, and teaching strategies together. High-perceived PLC departments can be defined as departments where teachers have ongoing and in-depth conversations about education, teaching and student learning and assume a common responsibility for teaching and learning. Conversely, in low-perceived PLC departments, teachers' sense of collective res-

ponsibility is limited to students' well-being and their own students' learning. Their dialogues only take place at specific moments during the school year, with a limited number of department colleagues and are restricted to practical matters. Teachers in low-perceived PLC departments usually work in isolation and only work together during mandatory department meetings. However, in both high- and low-perceived PLC departments, there is little use of deprivatized practice. This is in line with the findings of Lomos, Hofman, and Bosker (2011), which show that teachers in PLCs in secondary schools only occasionally observe each other's teaching practice. Indeed, the TALIS report has shown that Flemish teachers rarely share their teaching practice openly and, likewise, rarely observe or provide feedback to each other (OECD, 2014). Future research could explore why teachers in secondary schools do not participate in deprivatized practice.

Concerning our second research question, differences emerged between teachers' PD depending on the presence of PLC characteristics in their department. Teachers in high-perceived PLC departments learn more from their colleagues when compared to teachers in low-perceived PLC departments. Moreover, they consider participation in their department as more valuable for their PD than teachers in low-perceived PLC departments. Teachers in high-perceived PLC departments acknowledged that colleagues could be resources for their PD. They also reported more subject-specific PD when compared to teachers in low-perceived PLC departments. Hence, the findings of this study indicate that teachers who experience more collective responsibility for their subject(s) tend to have more frequent in-depth discussions with colleagues. As a result, they learn more about their subject and develop their teaching practice accordingly. These findings corroborate previous research that points to the importance of reflective dialogues about teaching for teachers' PD (Stoll et al., 2006) and teachers' teaching practice (Parise & Spillane, 2010). These findings confirm that participation in a department with a high presence of PLC

characteristics can result in teachers' PD (Vanblaere & Devos, 2017).

For research question three, this study found that both the principal and the department head influence PLC characteristics in departments and teachers' PD. This is in line with the previous studies of Darling-Hammond and Richardson (2009), Ghamrawi (2010), and Stoll e.a. (2006), who found that leadership at all levels is important for developing and improving PLCs and teachers' PD. However, differences in leadership emerged between high- and low-perceived PLC departments.

More specifically, the results of research question 3a revealed that principals of high-perceived PLC departments provide their teachers with more support to work and learn together. Teachers in low-perceived PLC departments do not feel that their principal either supports or even expects this. Furthermore, the results indicate that principals of high-perceived PLC departments have a transformational leadership style. Here, the principal operates as a role model for participation and PD in departments. This supports the theory that transformational principals can create a collaborative culture and a learning organisation (Bryk, Camburn, & Louis, 1999; Leithwood & Jantzi, 2000), even in large-scale secondary schools. Furthermore, principals of high-perceived PLC departments are more positive and supportive regarding the PD of their teachers by promoting teachers' PD, in addition to paying sufficient attention to feedback. When principals are unable to provide instructional feedback, teachers receive feedback from their department colleagues. This confirms previous findings that principals sometimes have no knowledge of the teachers' subject, and instructional leadership is less utilised in secondary schools by the principal (Tuytens, 2012). However, as teachers can receive feedback on subject knowledge from their department colleagues, it can be assumed that department colleagues carry out instructional leadership practices.

Furthermore, research question 3b explores how teachers perceive departmental leadership and how this is related to PLC

characteristics in departments and teachers' PD. Our study shows that department heads influence both teachers' participation in their department and their PD. Hence, our results suggest that stimulating teachers to participate in their department and improving their PD are two major leadership roles. This is in line with a quantitative study conducted in Flemish secondary schools by Vanblaere and Devos (2017), in which two different leadership styles of department heads were found: group-oriented departmental leadership and development-oriented departmental leadership. The first focuses on improving and stimulating a collegial environment and collaboration or participation in the department. The latter focuses on improving and stimulating teacher and student development. The comparison between high- and low-perceived PLC departments in the present study, however, provided a more fine-grained understanding of these two departmental leadership roles. More specifically, our study shows that in high-perceived PLC departments, department heads are considered as supporters/motivators for teachers' participation in their department. They encourage teachers to discuss the content and the teaching of their subject, while department heads of low-perceived PLC departments have a supervisory role. This is consistent with the study of Vanblaere and Devos (2017), who found that teachers who perceive high group-oriented departmental leadership experience more collective responsibility in their department and engage in more dialogues than teachers who state that their department head does not focus on this. Moreover, this finding confirms the pivotal role of the department head in encouraging and defining a collaborative culture in departments (Busher & Harris, 1999; Ghamrawi, 2010). The second departmental leadership style - concerning the coordinating role of department heads in teachers' PD - is also confirmed in our study. For instance, they inform teachers in their department about PD activities. In high-perceived PLC departments, department heads are considered as subject matter experts. Due to their subject expertise,

department heads can also take on the role of instructional leaders. This result confirms that it is an important task for department heads to bring in expert knowledge (Binkhorst, Poortman, & Joolingen, 2017; Schelfhout, Bruggeman, & Bruyninckx, 2015). Finally, department heads in high-perceived PLC departments monitor the PD of the teachers in their department, whereas this is lacking in low-perceived PLC departments. This is in line with the findings of Vanblaere and Devos (2017), who found that teachers whose department head follows up on teachers' PD engage in more reflective dialogues than their colleagues whose department head does not. Moreover, this result confirms the findings of Shiu and Chrispeels (2003), and Weller (2001), who found that department heads are responsible and accountable for the monitoring of teachers' PD in their department.

### 6.1 Limitations

This study has several limitations. Firstly, deprivatized practice was not included in the selection of departments for the present exploratory case study research, due to its low mean score in the quantitative online teacher survey. Our results should therefore not be generalised to all PLCs, but should be understood only in relation to the two PLC characteristics analysed in the context of secondary school departments. However, the findings of this study mirror studies conducted in Flemish primary schools. See for example Vanblaere (2016) and De Neve and Devos (2017), who found in low PLC schools a sense of individualism, and dialogues that remained at a superficial level and were not spread throughout the school or school year, while the inverse was true for high PLC schools. Moreover, in low PLC schools, teachers' PD was considered as an individual responsibility, whereas in high PLC school, teachers reported on more diverse and profound PD. Finally, the principal in low PLC schools showed fewer initiatives in elaborating structural and cultural school conditions that develop a PLC. In contrast, the principal in high PLC schools invested in elaborating on both structural and cultural school conditions and shared leadership functions. A second

limitation concerns the limited sample scope. A relatively low number of participants drawn from four departments were involved in this study. Moreover, as these departments were selected through critical case sampling, they have a unique profile. Our findings should therefore be interpreted with caution and should not be generalised to other populations. However, we believe that our results can be transferred to several similar contexts, for example the Dutch context. The results of our quantitative study in 83 departments of 31 secondary schools, on which our case selection was based, are very similar to the PLC analysis of Lomos (2012) in Dutch secondary schools. Therefore, our findings of our qualitative analysis are also relevant for secondary school departments in The Netherlands. Further research should consider using a larger number of departments. Finally, this study focused on collective responsibility, reflective dialogue, teachers' PD, and principal and departmental leadership. Other factors that may affect the development and improvement of PLCs, such as school contextual influences (e.g. school size, location, and particular mix of students) and external influences (e.g. local and broader community, and policy decisions) (Stoll et al., 2006) were not included in this study. In addition, no other factors influencing teachers' PD were included, for instance, teacher characteristics (e.g. demographics and self-efficacy), and school organizational conditions (e.g. participative decision-making and autonomy) (Geijsel et al., 2009). Such factors could be examined in further research to obtain a broader picture of how departments can operate as PLCs, the role they play in teachers' PD, and the role of principal and departmental leadership for PLC characteristics in departments and teachers' PD.

### 6.2 Implications

Considering the limitations and exploratory nature of this study, our findings may all the same provide useful recommendations for practitioners and policymakers. This study furthers our understanding of teachers' participation and PD in secondary school departments.

Firstly, given the importance of high-perceived PLC departments for teachers' PD,

practitioners and policymakers should acknowledge that PLC characteristics in secondary school departments should be further stimulated. It is important that reflective dialogues are not limited to daily practical matters but involve in-depth conversations about teaching and the subjects of instruction. Principals and department heads need to encourage their teachers in this way. Boundaries that could prevent teachers from participating in their department should be acknowledged. In high-perceived PLC departments, we found that time is made available for formal department meetings, and when teachers need to address specific problems, informal and voluntary support is given (Stoll et al., 2006). A combination of formal structures and initiatives from teachers is essential for teachers' PD.

Secondly, principals should pay attention to their transformational leadership style and use this in supporting and encouraging teachers' participation and PD in their department. As it is difficult for principals to possess exhaustive knowledge of every subject being taught, instructional leadership can become a task for the department head or the department colleagues.

Thirdly, the department head plays an important role in high-perceived PLC departments. Therefore, it is advisable that principals delegate a capable person for that position. Furthermore, specific training for department heads can facilitate their ability to support high-perceived PLC departments and lead to better PD for teachers. To our knowledge, policy on the role and functioning of departments is limited to countries like the United Kingdom (Teacher Training Agency, 1998). Furthermore, the content of departmental leadership is determined by individual schools and not prescribed by government regulations (Eurydice, 2013). Therefore, in countries where there are few or no policy documents on the role and functioning of departments and the role of department heads, such as Flanders (Belgium), policy documents need to be elaborated. In this regard, we support initiatives such as the ongoing teacher career debate in Flanders and a recently conducted

project in the Netherlands, in which the central question was how the role and responsibilities of departments look like. The Ministry of Education, Culture and Science in The Netherlands commissioned this project (van Etteger, Oosterman, Botta, Cox, Verbiest & Richters, 2013).

## Note

<sup>1</sup> General Studies [Project Algemene Vakken=PAV] is a transdisciplinary subject taught in vocational secondary education that uses an integrated approach to learning contents, such as mother tongue/linguistics, mathematics, communication and organisational skills, and social studies.

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## Samenvatting

### Onderzoek naar de relatie tussen professionele leergemeenschapkenmerken in vakgroepen, professionele ontwikkeling van leraren en leiderschap

Leraren hun professionele ontwikkeling (PO) is belangrijk voor de kwaliteit van onderwijs. Professionele leergemeenschappen (PLG's) worden beschouwd als veelbelovende contexten voor deze PO. Deze studie onderzoekt PLG-kenmerken in vakgroepen in secundaire scholen en de rol van deze kenmerken voor leraren hun PO. Deze studie gaat ook na hoe leiderschap deze PLG-kenmerken en PO faciliteert. Gebaseerd op leraren hun percepties over de sterkte van PLG-kenmerken in hun vakgroep, werden twee hoog- en twee laagscorende PLG-vakgroepen geselecteerd voor een kwalitatief exploratief casestudie onderzoek. Semigestructureerde interviews ( $n=21$ ) met leraren wiskunde, Frans en Project Algemene Vakken (PAV), vakgroepvoorzitters en schooldirecteurs vonden plaats. De resultaten toonden aan dat hoogscorende PLG-vakgroepen potentieel hebben voor leraren hun PO. Deze leraren hebben een gedeelde en vakgerelateerde PO. Daarnaast verschillen de leiderschapspraktijken van schooldirecteurs en vakgroepvoorzitters in de hoog- en laagscorende PLG-vakgroepen. De samenwerking tussen leraren en hun PO wordt meer gestimuleerd door schooldirecteurs en vakgroepvoorzitters van hoogscorende PLG-vakgroepen.

**Kernwoorden:** vakgroepen; professionele leergemeenschappen (PLG's); schoolleiderschap; vakgroepleiderschap

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**Appendix A***Semi-structured interview guide*

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<b>PLC- characteristics</b>	General collaboration	<p>How would you describe the atmosphere between colleagues? How would you describe your relationship with colleagues? What does this relationship mean to you? What is your vision on collaboration? What do you find important about collaboration? What do you consider as positive aspects of collaboration? Which aspects could be improved? What is the school's vision on collaboration? In case your school has a policy on collaboration, what does this policy emphasise? What role does the principal play in this policy? What agreements apply to collaboration (how often, how much time, how long)? Are teachers obliged to participate in collaboration? In case your school has difficulties with collaboration, what are the difficulties? In case your school has a culture around collaboration, what does this culture mean and how is this culture built? How is collaboration supported/ stimulated within the school? How does the principal support/ stimulate collaboration within the school? Who supports/stimulates collaboration within the school?</p> <p><u>Additional questions for the school leader:</u> How well are you aware of the collegiality among teachers? To what extent does the school pay attention to collaboration between teachers? How is collaboration in your school defined and organised? How is the policy on collaboration developed and applied in the school?</p>
	Collaboration department	<p>What do you think about the collaboration in your department? What do you think is positive about the collaboration in your department? What could be better in the collaboration in your department? Would you like more/less collaboration? In which area? When do you collaborate with colleagues from your department? What is discussed in your department? Which things do you do together with your department? With whom do you mainly collaborate within your department?</p>
	Collective responsibility	<p>To what extent do you feel that your department has a shared responsibility for all students? In what way does this happen? Does this happen often? How do you feel about this?</p>
	Reflective dialogue	<p>To what extent do teachers in your department consult and exchange ideas? In what way does this happen? Does this happen often? How do you feel about this?</p>
<b>Teachers' professional development</b>		<p>What did you learn throughout the past school year? Where did you learn this? Why did you learn this? Did you use the things you learned in your classroom practice? What role does the school play in your professional development? What role does the principal play in your professional development? What role does the department head play in your professional development? What role do your colleagues play in your professional development? Which role do you personally play in your professional development? What role do your students play in your professional development? Which possibilities are available at your school for your professional development? Which possibilities have you used recently? What do you think of these possibilities? What encourages you to use these possibilities? What hinders you from using these possibilities? To what extent do you learn by collaborating with colleagues? What do you learn from colleagues? To what extent do you learn by collaborating with colleagues from your department? What do you learn from colleagues in your department? Do you share what you learn individually with your colleagues? Do your colleagues share what they learn individually with you? What do you think of this exchange? In what sense do you consider it important to continue to learn? Why? Did you apply new ideas to your classroom practice? Did you change your classroom practice during the past school year? Why did you change your classroom practice? Why did you not change your classroom practice?</p>

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**Appendix A (Continued)**  
*Semi-structured interview guide*

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<b>Principal leadership</b>	Leadership	<p>How would you describe your relationship with the principal? What does this relationship mean to you? What do you expect from a good principal? To what extent does the current principal meet these expectations?</p> <p><u>Additional questions for the school leader:</u> How would you describe your relationship with the teachers? What does this relationship mean to you?</p>
	Feedback	<p>To what extent does your principal give sufficient feedback to teachers? Have you already received feedback from your principal; if so, what kind of feedback is it about? Is it about general feedback or subject-specific feedback? To whom do you (still) appeal for subject-specific feedback? What do you think of this feedback?</p>
<b>Departmental leadership</b>		<p>Is there a permanent department head been appointed for your department? Who will take on this task? What do you think of this person? What is the main role of this person? What are the tasks of this person? How does this person make a difference in the collaboration within your department? How would you describe your relationship with the department head? What does this relationship mean to you? What do you expect from a good department head? To what extent does the current department head meet these expectations?</p> <p><u>Additional questions for the department head:</u> How would you describe your relationship with the teachers? What does this relationship mean to you?</p>

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**Appendix B**  
Coding scheme

<b>PLC -characteristics</b>	General collaboration	<b>Relationship with colleagues</b> (the relationship between respondent and colleagues); <b>Own vision</b> (what is the respondent's vision on collaboration); <b>Positive aspects collaboration</b> (what is going well within the collaboration/benefits); <b>Negative aspects collaboration</b> (what is going wrong or what can be improved within the collaboration/disadvantages); <b>School vision</b> (what is the school's vision on collaboration); <b>Policy</b> (formal collaboration: what is the policy of the school about collaboration, e.g. agreements); <b>Organisation/conditions</b> (how is collaboration organized, e.g. departments/work groups/... and what are the conditions for collaboration); <b>Culture</b> (informal collaboration: what is the culture of the school around collaboration); <b>Support and stimulation</b> (support and stimulation of the general collaboration, e.g. how and by whom?).
	Collaboration department	<b>More/less collaboration</b> (Satisfaction with the amount of collaboration in the department and why); <b>Positive aspects department</b> (what is going well within the collaboration of the department/benefits); <b>Negative aspects department</b> (what is going wrong or what can be improved within the collaboration of the department/disadvantages); <b>When</b> (when is there collaboration in the department, e.g. during exams); <b>What</b> (what is the content of the collaboration, e.g. discussions about practice/collaboration on material); <b>Who</b> (with whom is there collaboration, e.g. department colleagues); <b>Collective responsibility</b> (shared responsibility for all students within the department); <b>Reflective dialogue</b> (discussions between colleagues within the department).
<b>Teachers' professional development</b>		<b>Learned</b> (what did the respondents learn/what is the content of the professional development); <b>Where: outside the school/in the school</b> (where did teachers learn: outside the school, e.g. in-service training/ in the school, e.g. inviting a speaker into the school); <b>Purpose</b> (why did teachers learn (or not)/why do teachers continue to learn (or not)); <b>Motives</b> (what are the motives/motivations to learn); <b>Obstacles</b> (what are the obstacles/hindrances to learn); <b>Actors professional development</b> (Reference to those involved in professional development: from whom did the respondents learn/who plays a role in professional development? E.g. principal, department head, colleagues, self, students); <b>Beliefs about learning together</b> (How do the respondents think about learning with and from each other); <b>Changes in thinking</b> (do changes take place in the thinking/in the head of the respondent?); <b>Changes in teaching practice</b> (Do changes take place in the behaviour/in the classroom practice of the respondent?).
<b>Principal leadership</b>	Leadership	<b>Relationship with principal</b> (the relationship between respondent and principal); <b>Expectations regarding principal</b> (what are the expectations of the respondent regarding the principal and to what extent does the principal meet these expectations).
	Feedback	<b>General feedback</b> (e.g. collaboration in the school, projects); <b>Instructional/subject-specific feedback</b> (feedback on the teacher's subject, e.g. mathematics/French/General Studies).
<b>Departmental leadership</b>		<b>Who acts as department head</b> (who will take on this role/what are the characteristics of this person); <b>Tasks</b> (what is the role/what are the different tasks of the department head); <b>Relationship with department head</b> (the relationship between respondent and department head); <b>Expectations regarding department head</b> (what are the expectations of the respondent regarding the department head and to what extent does the department head meet these expectations).