Professional learning communities of school leaders within inter-school networks: opportunities and conditions for sustainable professionalization

E. Tanghe, T.F.H. Smits en W. Schelfhout

Abstract Given the challenging and complex task of school leaders to ensure quality education, peer learning is important for both professional and school development. Structural inter-school networks are relevant in the context of collective learning. Initiating quality partnerships between school leaders sustainably is challenging. Using a mixed-methods approach, we examine professional learning communities (PLCs) as a form of formal collective learning developed within existing inter-school networks during a two-year professionalization trajectory, what the experienced (learning) outcomes are, and which variables affect sustainable long-term development. Data collection was based on online surveys and in-depth interviews. Results indicate that the quality of collective learning increased significantly during the two-year trajectory. Most explanatory of the PLC's continued sustainability as a professional network for school leaders is the PLC's perceived approach during the PT. The perceived facilitating role of the inter-school network influences structural choices regarding future continuation and approach. It also demonstrates the need to invest in sustainable collective learning. Further longitudinal research into the sustainability of PLCs within inter-school networks and the quality of coaches is recommended.

Keywords learning networks, school leadership development, professional learning communities, leadership networks, collective learning

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1 Introduction

School leaders experience numerous school policy and school development challenges about the curriculum and how education is organized and evaluated (Cordero et al., 2018; Plavčan, 2020). They are pressurized by a complex and changing social context (Brown & Poortman, 2018; Gurr & Drysdale, 2020; Hawkins & James, 2016), and by their societal duty to provide high-quality education (Ritzema et al., 2022) and ensure student achievement (Tan, 2018; Trust et al., 2018; van Middelkoop & Glastra, 2018). To best carry out this expected and challenging job (Leithwood et al., 2020; Pont, 2020), school leaders would benefit from the support and input of a sounding board and from concrete policy incentives that encourage quality and innovation (Vekeman et al., 2022). School leaders can find support for existing school-related cases in their school (policy) team (Devos et al., 2018). Inter-school networks also provide a significant added value (Brown & Poortman, 2018; Harris & Jones, 2021; Vekeman et al., 2022), as they increasingly encourage schools to engage in structural collaboration (Brown & Flood, 2020; Levin et al., 2020; Rincón-Gallardo & Fullan, 2016). In Flanders, school communities (similar to school boards in the Netherlands and school districts in the US) can offer such an opportunity for collaboration and professionalization. Comprehensive schools can use their existing structure to facilitate learning and exchange processes for expertise promotion and school development (Vekeman et al., 2022). A possible approach of a structural network where a group of schools work together to share resources and/or enhance the quality of professional learning and the capacity for continuous improvement is a professional learning community (PLC) (Harris & Jones, 2019, 2021; Poortman et al., 2022). In a PLC a group of professionals – in this study the school leaders – share common goals and objectives, gain (new) knowledge collaboratively through interaction and reflection with a growth-oriented approach, and aim to improve practices (Kools & Stoll, 2016). Five characteristics of a PLC with professionals from different schools are collaboration, shared sense of purpose focused on student learning, reflective professional inquiry, leadership of this professional learning network and boundary crossing (Poortman et al., 2022). However, building sustainable and quality partnerships between the school leaders of comprehensive schools is not self-evident (Azorín et al., 2020; Harris & Jones, 2021). Due to its multidimensional and multilevel character, it is difficult to define, develop, and operationalize a PLC (Antinluoma et al., 2021). Research on methodologies to intensify collaboration within existing inter-school networks is limited (Chapman, 2013). Using a mixed methods approach, we investigate PLC outcomes and PLC sustainability as a result of a professionalization trajectory within existing inter-school networks (Schelfhout, 2017; Vaessen et al., 2014) throughout a PT. Furthermore, we attempt to determine the variables influencing learning outcomes and longer-term sustainable development of the PLCs.

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2 Theoretical framework

2.1 Peer learning among school leaders

Characteristics of effective school leader professionalization demonstrate the importance of peers and peer learning (Levin et al., 2020). Learning from each other offers school leaders opportunities to deepen (professional) self-awareness and reflect on their role and position (Bickmore et al., 2021; Daniëls et al., 2023; Levin et al., 2020). Reflective group learning allows for approaching recognizable situations holistically and from multiple perspectives, especially in diverse groups (Daniëls et al., 2023). Moreover, peer learning aligns with the learning preferences of school leaders (Coenen et al., 2021). A possible explanation is a reduction in professional isolation (Coenen et al., 2021; Levin et al., 2020; Trust et al., 2018), as commitment to networking and consultation provides opportunities to combat isolation. Additionally, experiencing recognition, appreciation, and support is key. Furthermore, the presence and development of mutual trust is essential (Coleman, 2012; Hooge et al., 2015; Rincón-Gallardo & Fullan, 2016).

2.2 Collective learning in and among schools

Collective learning is the process of collaborative professionalization in which a shift takes place from individual to shared knowledge construction (Katz & Earl, 2010). Collective knowledge construction in turn influences individual learning and becomes part of it. Moreover, collective learning generates increasing expertise by adopting each other's knowledge, skills, and attitudes, and by developing a shared language and commonality (Heikkila & Gerlak, 2013; Leithwood, 2019). Group members pursue common learning or outcomes that improve their work (Kools & Stoll, 2016). Collective learning has a process-oriented character and a focus on collective learning products such as new or reinforced ideas and insights, which may lead to policies, programs, and rules (Heikkila & Gerlak, 2013).

Four levels can be distinguished in collective learning at individual, organizational, and network levels (Kasl et al., 1997):

- Level 1 - fragmented learning: each individual learns separately, without commitment to face-to-face learning or sharing;
- Level 2 - collaborative learning: members share information relevant to their task or goals with a clear trade-off between effectiveness and efficiency. There is a minimal integration of views, experimentation is limited;
- Level 3 - synergistic learning: members share information (on demand) and insights are integrated at an individual and collective level. Experimentation occurs at individual and group level, discussing (different) insights;
- Level 4 - continuous synergistic learning: collective learning is habitual.
- Similarly classified collective learning processes are the acquisition,

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transfer, and dissemination of (new) knowledge, information, and/or experience (Heikkila & Gerlak, 2013).

This is also reflected in the main goals of inter-school collaboration (Atkinson et al., 2007): sharing best practices or professional expertise, enhancing student learning, school development, improving collaboration, and enriching learning opportunities. An educational network forms 'an extended group of people with similar interests or concerns who interact and exchange knowledge for mutual assistance, support and to increase learning' (Kools & Stoll, 2016). Professional learning networks that capitalize on peer learning can thus contribute to school leadership development (Leithwood & Azah, 2016), as a group of connected educators – in this study school leaders – collaborate to use this connectivity to improve practices in and across schools and/or their school system (Brown & Poortman, 2018).

2.3 Conditions for collective learning within inter-school networks
For school development, collective learning should be purposeful and intentional (Baas et al., 2023; Hooge et al., 2017). Three primary contextual characteristics of external networks are related to the outcomes achieved (Russell et al., 2015): composition, interaction within networks, and network structure and coordination.

Composition
An external network consists of at least three legally autonomous organizations cooperating structurally to achieve collective goals in addition to their own (Provan & Kenis, 2008). Each organization represents a social structure, cultural patterns, and symbolic orders, that are evident in the context of change processes, and influence, for instance, geographical or cultural cooperation between organizations (Atkinson et al., 2007). An average of eight participating schools is optimal to maintain a common focus, workability, and overview (Feys & Devos, 2015; Provan & Kenis, 2008).

Interaction within the network
Strategies aimed at jointly exploring ideas and creating a shared sense of purpose and focus are indispensable, combined with enabling ownership and autonomy (Armstrong & Ainscow, 2018; Hayesa & Briggs, 2015; Huijboom et al., 2023). Close interaction with strategies focusing on engaging participants and creating connection and collaboration is recommended (Hooge et al., 2017) to add value to participants (Baas et al., 2023; Dingyloudi et al., 2019).

The degree of solidarity and proximity within the network influences information sharing and trust (Armstrong & Ainscow, 2018; Feys & Devos, 2015). Relationships with mutual trust, shared understanding and collective responsibility appear to represent more significant interactional dimensions

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of networking than cooperation and taking action (Leithwood, 2019; Rincón-Gallardo & Fullan, 2016; Vaessen et al., 2014). Trust in itself is insufficient to perceive the network as relevant for professionalization (Hooge et al., 2017). However, goal setting and feedback loops contribute to positive outcomes and positively influence the other components (Harris & Jones, 2019; Majchrzak et al., 2015).

2.4 Network structure and coordination
While inter-school networks can contribute positively to professional and school development, there are challenges associated with the context about network structure and coordination (Russell et al., 2015) that can affect PLC processes (Hairon et al., 2017; Sleegers et al., 2013).

History of collaboration
Pre-existing relationships are essential in inter-school collaborations, despite being no prerequisite for success (Ainscow, 2015). Prior collaboration may facilitate collective learning, as participants experience fewer boundaries (Baas et al., 2023). However, prior competition, cultural differences, and school inequality can impede connection (Armstrong & Ainscow, 2018; Feys & Devos, 2015).

Dynamics
Inter-school networks appear to be unstable and dynamic. However, this does not thwart positive outcomes or experiences. On the contrary, this offers opportunities to respond to changes in external factors (Hooge et al., 2017; Majchrzak et al., 2015). These changes may arise within networks when establishing (new) goals and approaches, in the process of decision-making, through roles and procedures, or changing group composition (school- or individual-based). Current needs and interests may lead to increased cooperation, or, conversely, competition. Responding to this is crucial. Alignment between the goals of the participants and their school is important for sustainability of support and implementation (Baas et al., 2023).

Process guidance and the need to (learn to) develop it
The various network partners must feel involved in the topics being discussed, they must feel they can participate as equals (Coenen et al., 2021; Rincón-Gallardo & Fullan, 2016), and sense that shared leadership is firmly embedded in the collaboration with the partner schools (Devos, 2014; Hayesa & Briggs, 2015; Leithwood & Azah, 2016). Creating strategic accountability for the outcomes of the PLC facilitates higher effectiveness as all PLC members know about the focus and goal of the PLC and they agree to responsibilities (Easton, 2016).
    The importance of a facilitator with a specific mandate and competencies to

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guide the network is indisputable (Harris & Jones, 2019; Huijboom et al., 2023; Leithwood, 2019; Turner et al., 2018). Combining a critical attitude with building close relationships is challenging (Margalef & Roblin, 2018). The facilitator adopts a non-hierarchical position and uses an organic-cultural approach and purposefulness in developing inter-school networks (Devos, 2014; Hooge et al., 2015; Ritzema et al., 2022). His approach should be continuously adapted to the needs of the PLC group (Margalef & Roblin, 2018). Few sources can be found on who ideally performs this specific role. A superintendent (Hooge et al., 2015), who is the principal of a structural inter-school network, is mentioned. A trusted external partner who facilitates peer learning and acts as a connecting mediator may suffices (Hayesa & Briggs, 2015; Honingh & Stevenson, 2020). School leaders who assume a central role in existing in-school networks often take up this role (Moolenaar & Sleegers, 2015). The quality of guidance determines the extent to which collective learning is considered valuable (Coenen et al., 2021; Feys & Devos, 2015).

Structural support
For the sake of sustainability, inter-school collaboration requires support in terms of scheduled time, resources, and moral support (Armstrong & Ainscow, 2018; Bouchamma et al., 2019; Huijboom et al., 2023). Communities linked to a project often dissolve after the (financial) support ends (Baas et al., 2023).

When facilitators leave, the network PLCs are vulnerable. While this open up new opportunities (Antinluoma et al., 2021), can an inter-school PLC sustain itself in the long term without a structural facilitating coach? Creating and developing a network with the expected and sustainable quality is challenging, which illustrates the need to learn to develop it gradually and goal-oriented, potentially structurally supported (Vanblaere & Devos, 2018). Five skills and qualities collaborative school leaders bring to their network are collaboration, building relationships, having a knowledge base; willingness to learn, and to lead with a vision (Hayesa & Briggs, 2015). Research shows that school leaders play a main role in the development of their schools as PLCs (Antinluoma et al., 2021; Huijboom et al., 2023; Valckx et al., 2021; Vanblaere & Devos, 2018) and the creation of a supportive human resources management (de Jong et al., 2021) theoretical knowledge about the establishment and development of a PLC (Bouchamma et al., 2019), experience with a PLC as a participant (Wang, 2018) and a coach-the-coach approach can reinforce this. Research on professionalization in this area is scarce, although its relevance has been stated (Bryk et al., 2015).

The literature showed the importance of pre-existing collaboration and the need for a facilitating context before the start of and during the PLC. The concrete organization and approach (by a coach) of the PLC is also an important factor, but are these variables influencing (learning) outcomes?

3 Research design and methodology

3.1 Research model and research questions
The research questions are:
- Q1: how does the approach of the PLC during a PT influence 1) the outcomes of the PLC and 2) its sustainability after completion (quantitative and qualitative)?
- Q2: how does the facilitating role of the (structural) inter-school network influence 1) the outcomes of the PLC and 2) a sustainable continuation of the PLC within this partnership after completing a PT (quantitative)?
- Q3: how do the perceived outcomes of the PLC during the PT influence the sustainable continuation of the PLC within the inter-school network (qualitative)?

Figure 1
Research model
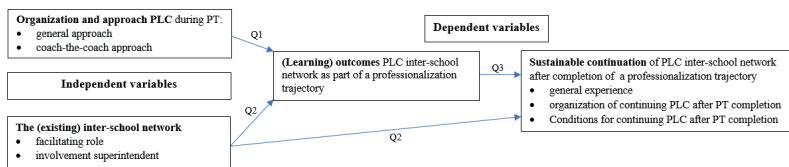
3.2 Research context
In September 2021, a two-year PT funded by the Flemish government (Belgium) started. The government's call for participation explicitly requested to register as an existing partnership of at least four schools aiming to support collective learning processes. All schools can establish informal partnerships with each other in an inter-school network. If such an inter-school network was involved in this study, all of its member schools constituted one single PLC. In the Flemish context, these partnerships often coincide with formal school communities. The school communities within the education system of the Flemish Community – initiated since September 2020 in the context of an administrative scale-up – are determined by Flemish decree (2023). School communities consist of schools of the same educational level (primary or secondary) and from geographically neighboring educational districts. Schools may or may not belong to the same educational network and the same school board. Separate composition criteria apply to both levels of education. A school community, in theory, has a lifespan of six years, which currently ends on August 31, 2026.

External networks, however, thrive voluntarily and as a positive bottom-up response to present needs (Armstrong & Ainscow, 2018; Brown & Poortman, 2018; Devos, 2014; Majchrzak et al., 2015; Vaessen et al., 2014). Associated

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(financial) benefits could generate other intentions (Ainscow, 2015; Brown & Flood, 2020). However, incentives and decree obligations are insufficient to create solid and sustainable cooperation (Feys & Devos, 2015). Few conditions are imposed on school communities, which raises the question to what extent thorough cooperation and joint investment in in-service professionalization opportunities can be expected. By comparison, in Dutch legislation, school boards (as an umbrella organization for several schools) are responsible for educational quality (Ritzema et al., 2022). This assumes, among other things, the presence of administrative capacity (Hooge et al., 2015) with an explicit focus on staff and educational development (Ritzema et al., 2022). A focus for school boards is targeted knowledge and expertise promotion between schools. Again, significant differences appear between school boards in the extent to which they succeed (Ritzema et al., 2022). It is a challenge for school communities and school boards to initiate and sustainably develop this kind of collaboration, partly based on the conditions for in-depth exchange identified in the theoretical framework.

3.3 Professional development approach

The PT consisted of training days, PLC meetings, and coaching, combined with a specific approach as described in Tanghe & Schelfhout (2023) to generate maximum transfer to the participants' schools as well as concrete actions regarding vision and school development. The total group of participants (N=149) participated in the training days. The schools of each inter-school network (informal partnership or formal school community) participated together in the PLC meetings (min. four times per school year). Each PLC had a regular coach during the two years of the project. This coach was part of the training team. Each coach supervised a minimum of one and a maximum of three PLCs. In the first year the focus was on coaching the PLC. The second year saw a shift to a coach-the-coach approach where one of the PLC's respective participants assumed the coaching role, guided by the regular coach.

3.4 Participants

Fourteen existing inter-school networks reacted to the government's call and participated in the PT. Each network consisted of four to 19 participating schools. With respect to existing network structures, combined with an optimal average of eight schools for maintaining a common focus, workability and overview during PLC meetings, the network of 19 schools was split into two. This results in a total of 15 PLCs.

Three forms of inter-school networks (Table 1) participated. Thirteen inter-school networks were based on an existing formal partnership, i.e. school communities by decree ("A" in Table 1). These schools have been in contact and school leaders often already participate in structural consultations. However,

participants do not necessarily know each other or cooperate closely. Not all schools that normally are members of the school community necessarily participated in the PT, while in some school communities full participation was mandatory.

In five inter-school networks, some of the member schools of a school community formed the core participant group, with one school of another school community interested in being a member of the network (A+). As with A, cooperation already exists within the established school community, though its degree may differ. The added school is often known regionally, yet without cooperating with it.

A third form of network is represented by schools from different school communities throughout Flanders (B).

Based on the in-depth interviews (ESA-D) with school leaders, collaboration was categorized according to the level of collective learning present in the inter-school network at the start of the PT within the four levels formulated in the theoretical framework (cf. 2.2).

Table 1

PLC of inter-school networks at the start of professionalization trajectory

PLC	Number of participants (*n*)	Primary (1) / Secondary education (2)	Type	Participation school community	Level of learning inter-school network
1	7	1	A	Partial participation	3
2	10	1	A	Partial participation	4
3	8	1	B	/	1
4	11	1	A	Complete participation	2
5	13	1	A	Complete participation	2
6	7	1	A	Partial participation	2
7	11	2	A+	Partial participation	3
8	12	2	A+	Partial participation	2
9	5	2	A	Partial participation	2
10	11	2	A+	Complete participation	3
11	8	2	A+	Partial participation	2
12	6	2	A	Complete participation	2
13	5	2	A+	Partial participation	2
14	9	2	A	Complete participation	2
15	8	2	B	/	1
N	131				

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In September 2021, 149 participants started the PT and each participated in a PLC. Participants were employed in primary (43%) or secondary education (57%). A management position was held by 58% of the participants, and 42% occupied a middle management position with a focus on the learning support of students. 93% participated with a colleague. At the start of the PT, 50.1% (n=123) had not yet participated in any form of learning community that required more extensive participation (more than once per school year) (Table 2). 13% had participated in a PLC committed to in-depth discussion and development of policy on the basis that professionalization is better done collectively with various profiles, given the shared responsibility for quality. Moreover, sustainable educational change benefits from the involvement of all school team members.

Table 2

Previous participation in types of learning communities

		Frequency	%
Participation in types of learning communities discussing challenges in depth, sharing types of approaches, discussing, and possibly developing more deeply	no participation	43	35.0
	limited participation (1 time per school year)	18	14.6
	extended participation (2-3 times per school year) with more general discussions	21	17.1
	extended participation (2-3 times per school year) with more in-depth discussion, possibly development of school policy	25	20.3
	intensive participation (4 or more times per school year) with a definite agenda, in-depth discussion and development of policy	16	13.0
N		123	100.0

3.5 Data collection

The study uses a mixed methods research design to answer the research questions. In this fully mixed sequential equal status design, the combination of quantitative and qualitative data with equal weight collected within three stages of the research process increases relevance and provides an opportunity to substantiate the relationship between variables (Mortelmans, 2018). The questionnaires were developed based on the literature review.

An online survey with open and closed-scale questions was organized over three moments. Before the PT, participants completed an initial analysis questionnaire (ISA-S). The questions explored the extent to which participants were already participating in structural inter-school networks, and whether a need for more cooperation existed. After the first year of training (TSA-S), the desire for the continuation of a PLC after the end of a PT was examined. 131 participants completed the written survey (i.e., response of 78.9%). At the end of the PT, the ESA-S focused on experiences with the organization and approach of

the PLC, the perceived effects on the outcomes, and the desire for sustainable continuation. Furthermore, experiences with participation as an inter-school network were surveyed. A total of 133 of the 138 participants (n=96%) who participated during the second year completed the final survey.

In-depth interviews with school leaders were organized in May 2023 (ESA-D) to further question and explain trends that emerged from the quantitative data collected. The semi-structured online interviews were conducted using a question protocol (Morris, 2015; Seidman, 2006). In-depth interviews were recorded with participants' consent. Forty-two school leaders, five superintendents, and two participants combining school leadership with a position as a superintendent participated, evenly distributed across the different PLC groups.

To link the data collected at an individual level and to send an individual reminder, personal data were requested. Participants were informed of this method using a signed commitment statement before the PT and a cover letter accompanying each call. During data processing, each respondent was assigned a personal code to link the separate data sets and then anonymize the data.

3.6 Data analysis

The independent variables relate to the perceived situation of the inter-school network before the PT, the organization and approach of the PLC during the PT, and the facilitating role of the inter-school network. We examined the effect of these independent variables on the dependent variables that are related to the learning outcomes of the PLC and the sustainable continuation of the PLC after the completion of the PT.

The quantitative online survey data were processed in SPSS and used at a descriptive level to substantiate the qualitative data. Six-point Likert scales were converted numerically. Exploratory factor analyses were conducted to arrive at meaningful, distinguishable, and reliable scales. Cronbach's alpha (α) as a measure of reliability is above 0.70 for all scales. For the final survey data, the strength of the relationships present and their predictive value were checked using single regression analyses. All regression analysis assumptions were fulfilled. To detect the extent to which the variance in the dependent variables is explained by the explanatory independent variables (R^2), the following categorization was used: <10% weak, 10-25% moderately strong, 25-50% strong, >50% very strong, and 100% perfect correlation (De Vocht, 2021).

The qualitative data from the open online survey questions and in-depth interviews were processed in NVIVO and analyzed deductively within the predefined categories of the research questions. To answer Q3, new subcategories were created based on inductive analysis as explanatory variables that were not theoretically presupposed (Mortelmans, 2018). All the data were quantified and utilized as citations to interact with the quantitative data for further substantiation.

4 Results

4.1 Outcome variables PLC inter-school network as part of a PT

4.4.1 Learning outcomes at the PLC level

The impact of participation in the PLC during the PT contributed strongly to the perceived outcomes (Table 3). There appears to be a large spread. In 4.4, we explore how this can be explained by different independent variables.

Outcomes initiated by participation in PLC

Factors	N	Six-Point Scale	M	SD
Refreshing insights/acquiring new insights	131	Completely disagree (1) – completely agree (6)	4.95	.914
Processing acquired insights (general critical reflection, brainstorming, creating goal orientation, etc.)			4.88	.992
Converting acquired insights into action			4.69	1.044
Planning concrete actions			4.56	1.103
Having the desire to continue working on the content			5.05	1.022

4.1.2 Sustainable continuation of PLC inter-school network after the PT

After the first year of the PT (TSA-S), 83.9% (Table 4) wished for the continuation of the PLC (M=4.74; SD=1.152). At that time, 90% were positive about participating in a PLC after completion (M=4.88; SD=1.039). For both questions, the spread is relatively high at the end of this first year.

TSA continuing PLC after completion PT

		Six-Point scale	Frequency	%	*M*	*SD*
TSA: this PLC can definitely continue as far as I am con-cerned	Completely disagree (1)	Completely disagree (1) – completely agree (6)	2	1.5	4.74	1.152
	Disagree		2	1.5		
	Rather disagree		17	13.1		
	Rather agree		24	18.5		
	Agree		47	36.2		
	Completely agree (6)		38	29.2		
TSA: if I get the opportunity to participate in a PLC after the professionaliza-tion trajectory I will certainly participate in it	Disagree	Completely disagree (1) – completely agree (6)	4	3.1	4.88	1.039
	Rather disagree		9	6.9		
	Rather agree		27	20.8		
	Agree		48	36.9		
	Completely agree (6)		42	32.3		
Total			130	100.0		

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Although continuing the PLC with the inter-school network after the PT is not mandatory, all PLC groups (100%) planned a continuation, according to the ESA-S. 77.9% (*n*=102) indicated that the PLC would continue to meet in the same composition in 2023-2024. 22.0% had not reached a concrete agreement on membership. Organizationally, 50.0% had set follow-up dates and 45.2% had agreed on frequency and location. 59.8% indicated that they had decided on content priorities for future PLC meetings. 43.1% indicated that further approaches had been defined. Therefore, during the PT, a solid basis was laid for the sustainability of the PLC within each inter-school network.

4.2 Organization and approach of the PLC during the PT
In addition to items associated with the general PLC approach (4.2.1), we examined experiences with the coach-the-coach approach (4.2.2). We then explored the influence of these independent variables on the output and sustainability of the PLC after the completion of the PT (4.2.3).

4.2.1 General approach
In the ESA-S, participants indicated that they experienced the idea, inspiration, and information sharing (*M*=4.98; *SD*= .965) as the PLC's most effective content-related focus (Table 5; Appendix 1). 97.0% saw opportunities to network

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and share within these networks as a positive approach (*M*=5.22; *SD*= .871). Support and receiving (peer) feedback were highly valued by 90.8%, although there appears to be a substantial response spread (*M*=4.73; *SD*=1.051). In particular, the conditions of collective learning within external networks have been achieved and more in-depth levels (3 and 4) of collective learning have been realized.

Table 5

Focus PLC during professionalization trajectory

Items	N	Six-Point scale	M	SD
Sharing general ideas, inspiration and information	132	Completely disagree (1) – completely agree (6)	4.98	.965
Focus on defined themes			4.56	1.065
Focus on specific demands/needs of participating schools			4.69	1.065
Focus on concretization in/ expectations around action plan			4.32	1.168
Co-creation together with the participating schools			4.17	1.314
Opportunities for networking, sharing	131		5.22	.871
Receiving support and feedback (based on personal support, reference questions, …)			4.73	1.051

4.2.2 The coach-the-coach approach

One aspect of the PLC within the PT was to let participants experience its capabilities and teach them how to use and supervise one themselves, to facilitate development processes (Table 6; Appendix 3). 74.8% found the coach's approach inspiring, notwithstanding differences between coaches and their appreciation (*M*=4.35; *SD*=1.335). 76.4% experienced that the coach explained their approach in light of a potential future application of a PLC (*M*=4.34; *SD*=1.182). Being coached during the second year was still perceived positively by 77.1%, with a spread in responses between the various PLCs (*M*=4.45; *SD*=1.223). The extent to which the coach made suggestions to coach the PLC was rated positively by 73.3% (*M*=4.25; *SD*=1.227), though with a clear spread.

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Table 6

Experience coach-the-coach approach

Items	N	Six-Point scale	M	SD
The approach of our coach was inspiring for how to facilitate development processes in a PLC.	131	Completely disagree (1) – Completely agree (6)	4.35	1.335
The coach explicitly mentioned the approach used to apply it himself at a later stage during a PLC.			4.34	1.182
During the second year, the coach actively supported participants in coaching themselves in order to guide this PLC in the future (coach-the-coach).			4.45	1.223
The coach actively gave suggestions about guiding a professional learning community.			4.25	1.227

4.2.3 *Influence of organization and approach of a PLC on its outcomes during the PT*

Using single regression analyses, we examined the explanatory value of the perceived functioning of the PLC for its outcomes. Table 7 shows the independent variables in the first column, corresponding to the points described in 4.2.1 to 4.2.2. Row 1 shows the outcome variables by (learning) outcomes of the PLC (see 4.1.1). Consequently, the perceived approach of the PLC has a strong explanatory relationship with its outcomes. In particular, focus on the action plan and co-creation (rows 4 and 5) have strong explanatory effects on the perceived learning outcomes (items A-E) and sustainability (F). The moderately strong explanatory effect of sharing and networking and creating opportunities for feedback at PLC meetings indicates the perceived added value of structural opportunities for peer learning within an inter-school network. One school leader states: "The quality of our PLC was inextricably linked to the quality of the coach." (R139). Considerable differences can be observed: "It was too informal, everything was good. Fortunately, we have some strong school leaders who took the initiative themselves." (R122) or "The great strength of our coach lies in our school community coming closer together through his approach, which is not evident with this group." (R82).

For the coach-the-coach approach (items 8-11), we see some moderately strong relationships, indicating a rather limited experienced influence on the outcomes of the PLC within the inter-school network.

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Table 7

Influence of approach PLC on outcomes of the PLC during the PT

Outcome variables approach PLC inter-school network	Output PLC during the professionalization trajectory				
	A: refreshing insights/ acquiring new insights	B: processing acquired insights	C: converting acquired insights into action	D: planning concrete actions	E: having the desire to continue working on the content
General approach					
1: sharing general ideas, inspiration and information	$F(1,129)=23.31$, $p<.001$, $R^2=.153$	$F(1,129)=25.98$ $p<.001$, $R^2=.200$	$R2<.100$	$R2<.100$	$F(1,129)=21.530$, $p<.001$, $R^2=.166$
2: focus on defined themes	$F(1,129)=28.646$, $p<.001$, $R^2=.221$	$F(1,129)=21.075$, $p<.001$, $R^2=.140$	$F(1,129)=32.865$, $p<.001$, $R^2=.203$	$F(1,129)=26.510$, $p<.001$, $R^2=.170$	$F(1,129)=30.651$, $p<.001$, $R^2=.192$
3: focus on specific demands/needs of participating schools	$F(1,129)=26.113$, $p<.001$, $R^2=.168$	$F(1,129)=19.913$, $p<.001$, $R^2=.134$	$F(1,129)=22.864$, $p<.001$, $R^2=.151$	$F(1,129)=25.495$, $p<.001$, $R^2=.165$	$F(1,129)=28.064$, $p<.001$, $R^2=.179$
4: focus on concretization in/ expectations around action plan	$F(1,129)=23.972$, $p<.001$, $R^2=.157$	$F(1,129)=48.384$, $p<.001$, $R^2=.273$	$F(1,129)=66.163$, $p<.001$, $R^2=.339$	$F(1,129)=74.679$, $p<.001$, $R^2=.367$	$F(1,129)=55.948$, $p<.001$, $R^2=.303$
5: co-creation together with the participating schools	$F(1,129)=14.719$, $p<.001$, $R^2=.102$	$F(1,129)=26.879$, $p<.001$, $R^2=.172$	$F(1,129)=38.312$, $p<.001$, $R^2=.229$	$F(1,129)=44.186$, $p<.001$, $R^2=.255$	$F(1,129)=50.551$, $p<.001$, $R^2=.282$
6: opportunities for networking, sharing	$F(1,129)=47.178$, $p<.001$, $R^2=.268$	$F(1,129)=43.754$, $p<.001$, $R^2=.253$	$F(1,129)=26.565$, $p<.001$, $R^2=.171$	$F(1,129)=20.888$, $p<.001$, $R^2=.139$	$F(1,129)=51.234$, $p<.001$, $R^2=.284$
7: receiving support and feedback	$F(1,129)=20.730$, $p<.001$, $R^2=.136$	$F(1,129)=36.550$, $p<.001$, $R^2=.221$	$F(1,129)=38.342$, $p<.001$, $R^2=.229$	$F(1,129)=50.171$, $p<.001$, $R^2=.280$	$F(1,129)=53.504$, $p<.001$, $R^2=.293$
Coach-the-coach approach					
8: the approach of our coach was inspiring for how to facilitate development processes in a PLC	$R^2<.100$	$F(1,129)=22.674$, $p<.001$, $R2=.149$	$R^2<.100$	$R^2<.100$	$F(1,129)=24.519$, $p<.001$, $R2=.160$
9: the coach explicitly mentioned the approach used to apply it himself at a later stage during a PLC	$R^2<.100$	$R^2<.100$	$R^2<.100$	$R^2<.100$	$R^2<.100$
10: during the second year, the coach actively supported participants in coaching themselves in order to guide this PLC in the future	$R^2<.100$	$R^2<.100$	$R^2<.100$	$R^2<.100$	$R^2<.100$
11: the coach actively gave suggestions about guiding a professional learning community	$R^2<.100$	$R^2<.100$	$R^2<.100$	$R^2<.100$	$F(1,129)=14.990$, $p<.001$, $R2=.104$

4.3 The facilitating role of a structural inter-school network
4.3.1 and 4.3.2 focus on the potential facilitating role of structural inter-school networks, followed by an examination of the explanatory effect of these independent variables on PLC output and sustainable continuation of the PLC.

4.3.1 Existing inter-school network
The ESA-S (Table 8) shows that 74.5% of the participants (*n*=106) perceived the inter-school network to fulfill a facilitating role before the PT (*M*=4.40; *SD*=1.425). During the PT, 79.2% experienced facilitation (*M*=4.48; *SD*=1.325), which is a slight increase compared to the perceived experience at the start.

Table 8

Facilitating role of inter-school network before and during professionalization trajectory

Items	*N*	Six-Point scale	Frequency	%	*M*	*SD*
Participation was facilitated by the school commu- nity before the professionalization trajectory	106	Completely disagree (1)	4	3.8	4.40	1.425
		Disagree	11	10.4		
		Rather disagree	12	11.3		
		Rather agree	16	15.1		
		Agree	38	35.8		
		Completely agree (6)	25	23.6		
Participation was facilitated by the school commu- nity during the professionalization trajectory		Completely disagree (1)	3	2.8	4.48	1.325
		Disagree	9	8.5		
		Rather disagree	10	9.4		
		Rather agree	20	18.9		
		Agree	40	37.7		
		Completely agree (6)	24	22.6		

70.8% (Table 9) reported plans for the school community to facilitate the PLC after the completion of the PT (*M*=4.12; *SD*=1.285). This response is indicative, as several PLCs planned another PLC meeting after the final training day of the PT to define, among other things, the role of the school community.
77.8% believed the school community should further facilitate the process (*M*=4.45; *SD*=1.318). Several school leaders mentioned in the interviews (ESA-D) that although the call for participation had been disseminated within the school community, it was only one or a few individual schools that took the initiative and urged participation in the PLC. The school community showed interest during the PT, though only on a general level and without structural follow-up or explicit support.
Regarding the skills of the superintendent as a facilitator, 67.9% agreed with his ideal facilitating role in the future, with a very wide response range

(*M*=4.12; *SD*=1.596). However, the interviews show that a further role of the superintendent as an effective PLC coach is questioned in some cases.

Items	N	Six-Point scale	Frequency	%	M	SD
I find it necessary that the school community facilitate further progress after the completion of the professionalization trajectory	131	Completely disagree (1)	1	3.8	4.12	1.285
		Disagree	9	7.5		
		Rather disagree	20	17.9		
		Rather agree	29	27.4		
		Agree	44	30.2		
		Completely agree (6)	28	13.2		
I find it necessary that the further progress is facilitated by the school community	106	Completely disagree (1)	2	1.9	4.45	1.318
		Disagree	9	8.5		
		Rather disagree	13	12.3		
		Rather agree	23	21.7		
		Agree	33	31.1		
		Completely agree (6)	26	24.5		
the superintendent of the school community is the ideal facilitator for facilitating the progress after the completion of the professionalization trajectory		Completely disagree (1)	10	9.4	4.12	1.596
		Disagree	10	9.4		
		Rather disagree	14	13.2		
		Rather agree	19	17.9		
		Agree	29	27.4		
		Completely agree (6)	24	22.6		

4.3.2 Influence of the facilitating role of inter-school network structures on PLC output during the PT and its sustainable continuation afterwards
The facilitating role of the structural inter-school network for the PLC outcomes has a limited explanatory value. The fact that school communities existing by decree – for those who participated – assumed a facilitating role prior to participation shows a moderately strong perceived relationship with the output aimed at refreshing and acquiring insights ($F(1,129)=12.662$, $p< .001$, $R^2= .109$) and incorporating acquired insights ($F(1,129)=16.416$, $p< .001$, $R2= .136$). When participation is facilitated by the existing inter-school network, it can be encouraging and create the mental capacity to participate optimally. The participants perceived the composition of the PLC based on an existing structural inter-school network as an advantage, which has a moderately strong relationship with learning outcomes during the PT ($F(1,107)=16.233$, $p< .001$, $R^2= .132$).

4.4 Influence of the experienced outcomes of the PLC during the PT on sustainable PLC continuation within inter-school networks

4.4.1 General experience of inter-school networks' PLC functioning
The interviews (ESA) show that the experienced outcomes of the PLC with the inter-school network motivate participants to continue a PLC after PT completion. The qualitative data show that school leaders began to experience a new and thorough collaboration within their inter-school network during the PT, and perceived this as valuable. Overall, the interviews show that school leaders became more acquainted in an unprecedented way (39). The PLC (partially) transcended the competition/historical context (4): "One of our schools used to be less involved. Through this PT, we engaged with each other, learning from each other." (R138). The participants' confidence increased (6) and lowered barriers (10). School leaders experienced support and endorsement (17). Almost all interviewees (*n*=43) reported that the PLC provided a larger (critical) sounding board (42) with more possibilities to share ideas, ask questions, and give and receive feedback compared to the approach they had known in the past. Since the start of the PT, discussions and collaboration reportedly have gained more depth (19). One school leader experienced a real 'learning community'. Participation of different profiles in the same PLC creates a valuable interaction between positions and levels (5), which is still un(der)exploited, even in schools with highly developed forms of collective learning (e.g. R313). Awareness and purpose are being shared while each school maintains its autonomy (9). Since the start of the PLC, content-specific and pedagogical themes are addressed in existing school communities (16). In terms of content, as a result of the experience during the PT, participants suggested starting supplementary thematic groups and/or using the PLC approach in the current inter-school networks (6).

4.4.2 Organization of continuing PLC after PT completion
During the two years of the PT, the three types of inter-school networks evolved differently.
School leaders who participate with their school community (forms A and A+) aim to sustain the depth of PLCs in the future, alongside existing meeting structures with a formal, administrative-organizational approach. In PLCs where this school community acted as a facilitator from the outset, this remains constant, although in some cases it is unclear what the specific role of the superintendent and the alignment of top-down facilitation with the bottom-up applied needs will be. In PLCs with initial self-selected PT participation by the school (item D table 10), this intention generally remains the same at the end of the PT in terms of further sustainability, as corroborated by the interviews (ESA-D). The cited reasons are the autonomous character within this formal structure,

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and/or lack of time of the superintendent. In these cases, school leaders prefer to use an independent working method.

The new partnerships (B) perceive PLC outcomes as an added value and prefer to keep it, potentially with a different PLC configuration (table 10). According to participants, not working within a structural inter-school network offers an advantage, as participating schools do not owe each other anything and individually choose to participate in sustaining the PLC. Nevertheless, they believe this autonomy could lead to non-commitment and decreasing contacts if the perceived output does not justify the distance between schools. These inter-school networks are searching for a sustainable structure.

The structural inter-school networks using deeper forms of collective learning at levels 3 and 4 are considering integrating the PLC in their existing (thematic) PLC groups and networking opportunities for school leaders, as the priorities are closely aligned in terms of content. By doing so, maximum sustainability can be achieved.

The coach can be a member of the current PLC or an external coach (previously linked to the PT). School leaders report that the (future) choice of a coach will be determined by the experiences with the coach during the PT, the process coaching expertise present among the PLC participants, the availability of coaches from the educational advisory service, and the available financial resources.

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Table 10

Concretization of organizational facilitating conditions for the sustainable continuation of the PLC with the inter-school network

PLC	A: membership PLG	B: coach engaged	C: completed training day/ experienced coach	D: support of school community/ superintendent	E: organization defined	F: themes/ priorities defined	G: approach defined
1	idem and/or a fusion with learning networks within the school community	-	+	-: no expectations	-	-	-
2	integration in existing PLC approach	+	+	+	+	+	+
3	- 1 school + 2 schools	-	+	-: no expectations	-	-	-
4	fusion into 1 PLC of interested schools	external coach	+	+: facilitation and participation	+	+	+
5							
6	idem or possibly expansion with schools school community	-	+	+	-	-	-
7	idem	-	+	+: facilitation and participation	-	-	-
8	idem	member of the PLC	+	-: no expectations	+	+	+
9	idem possibly +	-	+	-: no expectations	+	+/-	-
10	- 1 school	external coach	+	+: facilitation and participation	+	+	+
11	idem	-	+	-: no expectations	-	-	-
12	idem or a fusion with learning networks within the school community	-	+	+	+	+/-	-
13	idem or possibly expansion with schools school community	external coach	+	-: no expectations	-	-	-
14	idem	member of the PLC	+	+: facilitation and participation	+/-	+/-	+/-
15	idem or a fusion with learning networks within the school community	-	+	-	-	-	-

4.4.3 Conditions for continuing PLC after PT completion

The interviewed school leaders are aware of specific challenges and pitfalls. Based on their PLC experience as part of the PT, they aim to avoid certain PLC organizations and approaches in the future. They perceive their experience as a learning opportunity rather than a reason for discontinuing the PLC. They believe the future will show whether the lack of an explicit commitment and accompanying mindset, as was the case during the PT, will lead to greater non-committal and a passive attitude (11). School leaders consider joint prioritization a prerequisite for making the PLC valuable to all participants and ensuring focus (5). Furthermore, school leaders (6) consider it important for structural continuity that shared leadership is made explicit through the appointment of a (rotating) leader and/or coach with a clear mandate.

They (6) explore options to facilitate PLC quality monitoring and follow-up, as there is no feedback on the process of the PLC and process coaching via the external coach after PT termination. School leaders are aware of the time investment of preparing for and participating in a PLC (11), and the risks of it being overshadowed by other priorities. However, only a few school leaders explicitly mentioned opportunities for facilitation, for instance by structurally scheduling time and linking PLC meetings to other meetings. Another concern school leaders mention are staff changes, which could undermine sustainability.

5 Conclusion and discussion

This mixed-methods study aimed to examine how PLCs as a mode of formal collective learning throughout a PT develop within existing inter-school networks. Such forms of collective learning (Schelfhout, 2017; Vaessen et al., 2014) between school leaders is not evident (Antinluoma et al., 2021; Azorín et al., 2020; Harris & Jones, 2021).

5.1 The influence of the approach of the PLC during a PT on the outcomes of the PLC and its sustainability after completion

The single regression analyses and (quantified) qualitative data show the focus on PLC outcomes (Armstrong & Ainscow, 2018; Majchrzak et al., 2015) and is strongly indicative of the perceived output in terms of acquiring insights, as well as transferring them into concrete actions regarding professional and school development. Positive experiences with a permanent focus on the action plan and the ongoing co-creation in the PLC (Kools & Stoll, 2016) strongly explain the present intention to continue the PLC once the PT is completed. Sharing and networking with peers and creating opportunities for feedback during PLC meetings remain important for learning outcomes and the desire to continue working on challenges which are faced.

The explanatory value of participants' positive experience with the PLC approach with their inter-school network (Armstrong & Ainscow, 2018; Hooge et al., 2017) is a significant stimulus of the intention for and character of the continuation of a PLC after the PT.

The coach appears to play a role by providing the participants with a positive experience of how a PLC functions (Armstrong & Ainscow, 2018; Harris & Jones, 2019; Huijboom et al., 2023; Leithwood, 2019; Margalef & Roblin, 2018; Turner et al., 2018). The differences between the coaches should be further explored. The coach-the-coach approach used during the PLC sessions has a limited impact on learning outcomes, yet it does support the acquisition of insights into conditions for a valuable PLC (Bryk et al., 2015).

Considering the formulated research question, we can conclude that a PT focusing explicitly on developing PLCs within inter-school networks supports their further sustainability, given that participants perceive them as goal-oriented, insightful, and relevant to their practice.

5.2 The influence of the facilitating role of the (structural) inter-school network on PLC outcomes and sustainable continuation after completion of a PT

The facilitating role of the structural inter-school network for the PLC outcomes has a statistically limited explanatory value. However, the qualitative data show that school leaders within the PLC perceive added value in in-depth sharing and networking with their inter-school network. This illustrates the need for peer learning opportunities (Levin et al., 2020). A large group of participants experienced such sharing and collaboration and the value of a sounding board within their inter-school network for the first time during the PT (Devos et al., 2018; Vekeman et al., 2022; Wang, 2018). The broad and diverse content and feedback provided them with ample inspiration as well as opportunities for reflection, contributing to both personal, professional, and school development (Bickmore et al., 2021; Daniëls et al., 2023; Levin et al., 2020). Finding a sounding board in their peers provided support and appreciation. School leaders cited the time created to get acquainted and work together as positive for mutual trust (Coleman, 2012; Hooge et al., 2015).

5.3 The influence of the outcomes during the PT on the sustainable continuation of the PLC within the inter-school network

The data show that a) the ambition to continue the PLC after the PT is markedly present among all participating inter-school networks and b), different networks proactively initiated concrete actions towards the end of the PT. Overall, we can state that a PLC during a PT achieves the goals of inter-school collaboration (Atkinson et al., 2007). PLC groups that run during a PT can deepen the level of collective learning (Kasl et al., 1997). In inter-school networks in which

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superficial forms of collective learning (levels 1 and 2, Table 1) on both process and product levels existed before the PT (Heikkila & Gerlak, 2013), an evolution toward a deeper level can be observed. For inter-school networks with existent continuous synergetic collective learning (level 4), the PLCs are integrated into the existing organization. However, participation in the PLC of the PT provided additional experiences and insights **related to the creation of PLCs and how to collectively guarantee sustainable quality education (Hilton et al., 2015; Rekers-Mombarg et al., 2022)**. Remarkably, the absence of compulsory collaboration ensures a conscious choice to continue participating in the PLC in the newly established inter-school networks (form B, level 1). However, these PLCs are looking for a stable group composition and sufficient critical mass (Feys & Devos, 2015; Provan & Kenis, 2008). The dispersed locations of the schools may negatively affect further sustainability (Atkinson et al., 2007). The statistical explanatory value of the facilitating role of the structural inter-school network for the (learning) outcomes of the PLC during the two-year PT is limited. Nevertheless, the support of and incentive for collaborative participation with the inter-school network can have a facilitating influence on participants' perceptions regarding the PLC, and positively influence the perceived added value during the PT (Hairon et al., 2017; Sleegers et al., 2013).

Linked to the facilitating role of the inter-school network, at the end of the PT differences are noticed in how the continuation of a PLC is ensured, more specifically in terms of the organization and approach (Rekers-Mombarg et al., 2022) as well as expected commitment (Kasl et al., 1997) and shared leadership (Devos, 2014; Katz & Earl, 2010). In school communities (existing by decree) where the superintendent played a facilitating role before and (participated) during the PT, this will continue (Leithwood & Azah, 2016), although it is not always clear what this facilitating role will entail and who should fulfill it (Hooge et al., 2015). In the PLCs where this facilitation role was deliberately absent, the school leaders kept their autonomous status. The choice of an (external) coach will take into account the coach experience during the PT, coaching expertise among PLC participants, availability of coaches from the educational advisory service, and financial resources. It is recommended that the participating school leaders and superintendents make conscious and well-founded choices for the sake of the quality of collaborative learning (Coenen et al., 2021; Feys & Devos, 2015; Hayesa & Briggs, 2015).

By experiencing the PLC meetings as participants, school leaders realize that initiatives such as prioritization and goal orientation (Armstrong & Ainscow, 2018; Easton, 2016; Hooge et al., 2017) are essential for sustained participant engagement and enacting PLC processes (Hairon et al., 2017; Sleegers et al., 2013). The same applies to quality assurance through follow-up and (external) feedback (Majchrzak et al., 2015). School leaders want strive for shared leadership, equal commitment, and responsibility by making tasks, roles, and mandates explicit,

and maximizing the self-regulatory capacity of the PLC (Russell et al., 2015). They perceive facilitating a stable group within the inter-school network as a challenge, although changes in PLC composition can generate new insights and input (Hooge et al., 2017; Majchrzak et al., 2015) if the facilitator does not leave (Antinluoma et al., 2021). At the organizational level, creating structural time and space for professionalization is essential (Armstrong & Ainscow, 2018; Bouchamma et al., 2019; Hooge et al., 2017; Huijboom et al., 2023). The data show that some school leaders took specific actions at this level. Further research is needed to determine effective actions for the sustainable development of the PLCs when structural (financial) support ends (Baas et al., 2023).

Finally, we can conclude that a supported formal PT can be the start of a more informal but sustainable continuation of a PLC as a form of collective and peer learning within the structure of an existing inter-school network. It remains to be seen whether the intentions and plans of the inter-school networks are sufficient to sustain the effects achieved during the PT, and to overcome the aforementioned challenges.

Figure 2
Results
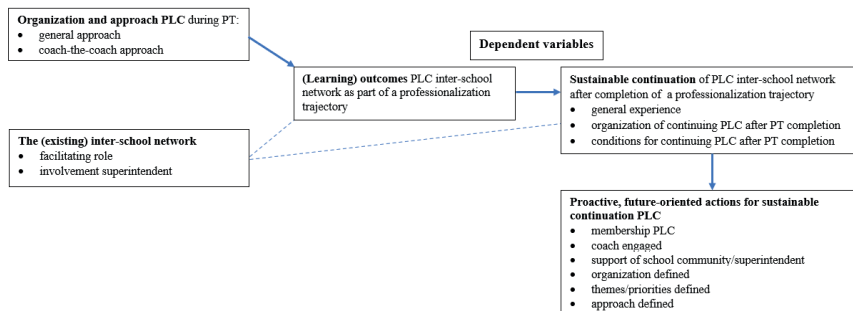
6 Recommendations

The government and school boards could use inter-school networks more effectively for knowledge and expertise development by engaging participants with different roles. To facilitate a sustainable PLC, being aware of challenges and necessary preconditions is crucial. PTs that integrate a PLC can facilitate the start of this form of collective learning. Besides active incentive and appreciative policies to encourage schools to cooperate more frequently and substantially, investments in structural time for professionalization is needed.

Although the present study is based on a relatively large group of respondents, it concerns participants who enrolled consciously and with a certain mindset in a two-year PT including PLCs. First of all this factor may

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have influenced the mindset on participation in PLC meetings. In addition, a limitation is that the quantitative and qualitative data are based on participants' perceptions and thus are only indicative of perceived added value. Further longitudinal research is recommended on the key sustainability factors of PLCs within the inter-school network after the PT. Lastly, research on the success factors for optimal process coaching is relevant for the coaches and the specific professionalization of this group.

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Samenvatting

Professionele leergemeenschappen van schoolleiders binnen bovenschoolse netwerken: kansen en voorwaarden voor duurzame professionalisering

Gezien de uitdagende en complexe taak van schoolleiders om kwaliteitsvol onderwijs te garanderen is leren van peers belangrijk voor beroepsprofessionalisering en schoolontwikkeling. Structurele bovenschoolse netwerken zijn relevant in het kader van collectief leren. Kwaliteitsvolle samenwerkingsverbanden tussen schoolleiders duurzaam opstarten is niet vanzelfsprekend. Door middel van een mixed methods-aanpak onderzoeken we hoe professionele leergemeenschappen (PLG) als vorm van formeel collectief leren zich binnen bestaande bovenschoolse netwerken ontwikkelen tijdens een tweejarig professionaliseringstraject, wat ervaren (leer)uitkomsten zijn en welke variabelen een duurzame ontwikkeling op langere termijn beïnvloeden. De dataverzameling gebeurde aan de hand van schriftelijke bevragingen en diepte-interviews. De resultaten geven aan dat de diepgang van het collectief leren gedurende het tweejarig traject significant is toegenomen. Verder blijkt de ervaren werking van de PLG tijdens het professionaliseringstraject het meest verklarend voor een verdere verduurzaming van de PLG als professioneel netwerk. De faciliterende rol van het bovenschoolse netwerk beïnvloedt structurele keuzes omtrent de toekomstige verderzetting en aanpak. Ook toont het onderzoek de noodzaak aan van investering in duurzaam collectief leren. Verder longitudinaal onderzoek naar de verduurzaming van de PLG met het bovenschoolse netwerk en de kwaliteit van de coach is aangewezen.

Kernwoorden lerende netwerken, schoolleiderschapsontwikkeling, professionele leergemeenschappen, collectief leren, bovenschoolse netwerken

Appendici

Appendix 1

Focus PLC during professionalization trajectory

Items	N	Six-Point scale	Frequency	%	*M*	*SD*
Sharing general ideas, inspiration and information	132	Completely disagree (1)	1	.8	4.98	.965
		Disagree	1	.8		
		Rather disagree	7	5.3		
		Rather agree	25	18.9		
		Agree	54	40.9		
		Completely agree (6)	44	33.3		
Focus on defined themes		Completely disagree (1)	3	2.3	4.56	1.065
		Disagree	1	.8		
		Rather disagree	15	11.4		
		Rather agree	35	26.5		
		Agree	56	42.4		
		Completely agree (6)	22	16.7		
Focus on specific demands/needs of participating schools		Completely disagree (1)	3	2.3	4.69	1.065
		Disagree	1	.8		
		Rather disagree	11	8.3		
		Rather agree	33	25.0		
		Agree	55	41.7		
		Completely agree (6)	29	22.0		
Focus on concretization in/expectations around action plan		Completely disagree (1)	5	3.8	4.32	1.168
		Disagree	4	3.0		
		Rather disagree	18	13.6		
		Rather agree	37	28.0		
		Agree	53	40.2		
		Completely agree (6)	15	11.4		
Co-creation together with the participating schools		Completely disagree (1)	3	2.3	4.17	1.314
		Disagree	14	10.6		
		Rather disagree	23	17.4		
		Rather agree	31	23.5		
		Agree	40	30.3		
		Completely agree (6)	21	15.9		
Opportunities for networking, sharing	131	Completely disagree (1)	1	0.8	5.22	.871
		Disagree	0	0.0		
		Rather disagree	3	2.3		
		Rather agree	19	14.5		
		Agree	50	38.2		
		Completely agree (6)	58	44.3		
Receiving support and feedback (based on personal support, reference questions, …)		Completely disagree (1)	1	.8	4.73	1.051
		Disagree	3	2.3		
		Rather disagree	8	6.1		
		Rather agree	42	32.1		
		Agree	41	31.3		
		Completely agree (6)	36	27.5		

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Perceived effectiveness approach of the coach

Items	N	Six-Point scale	M	SD	α
Focus on relationship	131	Comple-tely disagree (1) – completely agree (6)	4.70	1.128	.960
- The coach invited all participants to actively contribute - Through the approach the coach regulated that all participants (could) contribute - The coach maintained an engaged attitude towards all participants - The coach responded to the non-verbal reactions of participants - The coach was appreciative and constructive towards the participants - The coach regulated the input of participants who spoke for too long/too one-sided/.... to speak - The coach, through his/her approach, created a safe learning environment where I dared to bring up difficult(er) themes/sensitivities/... if I wished - The interaction of the coach with the participants increased the effectiveness					
Focus on communication			4.41	1.243	.932
- The coach ensured clear communication about the content and approach prior to the PLC meeting - The coach provided clear communication after a PLC meeting about the past PLC - The coach's communication helped focus on the goal of the PLC meeting					
Focusing on purpose and depth			4.65	.809	.925
- In our PLC we worked according to a clear structure - The coach had made this structure explicit - Working according to a clear structure increases the focus on the content - If the coach uses a specific approach, it is best to keep it the same every meeting - If a side issue came up, the coach led back to the substantive focus - Depth during the PLC is more important than finishing the predetermined schedule - The coach monitors the shared/defined priorities - The coach asks questions/content that participants bring up - Questioning contributes to the depth of the content - The coach summarized regularly - Summarizing contributes to the depth of content - The coach monitored the achievement of the set goal (versus chatterbox) - The coach asked critical questions that encouraged depth					
Coach expertise			4.70	1.274	.960
- Where pertinent, the coach provided on-topic advice - Where pertinent, the coach provided feedback					

Appendix 3

Experience coach-the-coach by coach

Items	N	Six-Point scale	Frequency	%	M	SD
The approach of our coach was inspiring for how to facilitate development processes in a PLC.	131	Completely disagree (1)	6	4.6	4.35	1.335
		Disagree	7	5.3		
		Rather disagree	20	15.3		
		Rather agree	24	18.3		
		Agree	50	38.2		
		Completely agree (6)	24	18.3		
The coach explicitly mentioned the approach used to apply it himself at a later stage during a PLC.		Completely disagree (1)	2	1.5	4.34	1.182
		Disagree	7	5.3		
		Rather disagree	22	16.8		
		Rather agree	34	26.0		
		Agree	45	34.4		
		Completely agree (6)	21	16.0		
During the second year, the coach actively supported participants in coaching themselves in order to guide this PLC in the future (coach-the-coach).		Completely disagree (1)	1	.8	4.45	1.223
		Disagree	9	6.9		
		Rather disagree	20	15.3		
		Rather agree	29	22.1		
		Agree	44	33.6		
		Completely agree (6)	28	21.4		
The coach actively gave suggestions about guiding a professional learning community		Completely disagree (1)	3	2.3	4.25	1.227
		Disagree	10	7.6		
		Rather disagree	22	16.8		
		Rather agree	30	22.9		
		Agree	50	38.2		
		Completely agree (6)	16	12.2		

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