Sharing is caring: Factors influencing knowledge sharing from PLC participants to other teachers in secondary education

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Abstract

There is great potential for Professional Learning Communities (PLCs) to influence educational improvement. However, this requires knowledge sharing and sharing knowledge with other teachers is a complex process that is not easy. This study explores which factors influence knowledge sharing from PLC participants towards the rest of the teaching staff within a secondary school in the Netherlands. Six PLC participants and six non-PLC participants were interviewed, and five school policy documents were analysed. The results show five distinguished categories of knowledge sharing factors, with a total of 22 enabling and/or hindering factors that influence PLC knowledge sharing. The five categories are: the context in which the knowledge is shared, characteristics of the knowledge source, characteristics of the content, characteristics of the knowledge receiver, and the organisational context. Amongst other conclusions, it was found that leadership plays an important role on multiple levels in the school, and that the relatively new concept of working hybrid influences knowledge sharing as well. The article concludes with discussing limitations and providing suggestions for follow-up research.

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Introduction

Sharing knowledge by thinking about how other people or communities could benefit from certain knowledge, and working together to merge best practices, can enhance educational innovation and improvement (Dochy, Gijbels, Segers & Van den Bossche, 2011). In a within-school Professional Learning Community (PLC), teachers collaborate, share and reflect, to improve their teaching (De Neve, Devos & Tuytens, 2015). This way of collaborating and sharing has proven to be an efficient way for teachers to improve their teaching, because it prevents reinventing the wheel (Dochy et al., 2011).

The knowledge and skills that are shared and developed in a PLC should not simply stay with the PLC participants, but should spread across the rest of the school (Prenger, Poortman & Handelzalts, 2018). Sharing new knowledge stimulates the continuous development of teachers, which is positively related to school effectiveness (Schechter, 2008). If knowledge is not shared outside of a PLC, it will remain within a small group of teachers, while the knowledge could improve the organisation as a whole if it would be shared with others (Schechter, 2008). There is potential for PLCs to have a broad reach for educational improvement, but sharing the knowledge with the rest of the school seems to be a complicated process that does not take place naturally (Prenger et al., 2018; Van Keulen, Voogt, Van Wessum, Cornelissen & Schelfhout, 2015).

This study aims to investigate which factors can potentially hinder or stimulate the process of knowledge sharing from PLC participants to their colleagues. In the existing literature some influencing factors for knowledge sharing have been found. These factors, however, were (mostly) not identified in the context of PLCs in education. To be able to foster and support knowledge sharing in (secondary) education PLCs properly, more insight into enabling and hindering factors in this context is needed.

This study will add to the existing knowledge sharing and PLC literature by investigating why PLC participants do or do not spread their knowledge within their school. This study will propose a framework for influencing factors, which can form the basis for further validation of influencing factors for knowledge sharing in educational PLCs.

Theoretical framework

PLCs

There is a great variety of definitions for what a PLC is. The goal of PLCs can be to add to professional development, improve practices, improve learning outcomes, or contribute to theory development (Van Keulen et al., 2015). The most widely used definition in educational science is: "a group of people sharing and critically interrogating their practice in an ongoing, reflective, collaborative, inclusive, learning-oriented, growth-promoting way; operating as a collective enterprise" (Stoll, Bolam, McMahon, Wallace & Thomas, 2006, p. 223). This definition, however, is not specified to a school context. In this study we will define a PLC as: "a school organisation in which a group of teachers shares and questions their practice from a critical point of view. This questioning happens in an ongoing, reflective, collaborative, and inclusive way" (De Neve, Devos, & Tuytens, 2015. p. 32). This definition, as opposed to the definition by Stoll et al. (2006), is specified to the context where the PLC consists of teachers within a school, instead of employees within a business company. PLCs may be located within one school, between two schools that share and compare their insights, or as an overarching network across several different schools (Harris & Jones, 2010). This study concerns PLCs that are located within the school. The school as a whole could benefit from the insights that are gathered and created in these PLCs (Schechter, 2008). To illustrate: teacher X who teaches only senior classes is involved in a PLC that focusses on student motivation, and has found an effective didactic method for increasing students' motivation. If teacher X keeps the knowledge to herself, the senior classes will probably benefit from it and show increased motivation. However, if teacher X shares the knowledge with teacher Y who teaches junior classes, also the junior classes can benefit from this didactic method, and students throughout the whole school could show increased motivation. To achieve such school broad improvements, PLC knowledge has to be shared.

The types of knowledge that can be shared, can be distinguished into *knowledge FOR practice*, *knowledge IN practice* and *knowledge OF practice* (Cochran-Smith & Lytle, 1999, as cited in Wood, 2009). Knowledge FOR practice is knowledge generated from scientific research. Knowledge IN practice is created by teachers from their own experience. Lastly, knowledge OF practice is a combination of scientific findings, combined with teachers' experiences in the daily teaching practice.

Knowledge sharing

Knowledge sharing is a knowledge management process, which allows knowledge to move through an organisation (Ipe, 2003). The existing definitions of knowledge management processes are sometimes inconsistent and ambiguous (Intezari, Taskin & Pauleen, 2017). Intezari et al. (2017) conducted a systematic literature review in which they distinguished three core processes: knowledge creation, knowledge sharing, and knowledge implementation. Creation is the generation of new knowledge, sharing is about how the knowledge is distributed, and implementation is about its use in practice. This study focuses on the sharing of knowledge, whereby acquired knowledge or information is made accessible to other people within an organisation (Ipe, 2003; Ryu, Ho & Han, 2003).

The concept of knowledge sharing relates closely to the concepts of knowledge flow and knowledge dissemination (Intezari et al., 2017). These two concepts are a way of sharing knowledge, but there are minor differences in the definitions. *Knowledge flow* can be defined as "A process whereby knowledge is passed between people or mechanisms within the organisation, which is driven by communication processes and information flows." (Lin, Wu & Yen, 2012; Shin, Holden, & Schmidt, 2001). A mechanism in this context is a knowledge processing mechanism in a broad sense, such as meetings and seminars, but also IT systems (Lin et al., 2012). This explains how knowledge can be made available to others within an organisation; through communication processes and information flows. An information flow could, for example, be a newsletter or an e-mail. *Knowledge dissemination* is "the transfer of knowledge within and across settings, with the expectation that the knowledge will be used conceptually or instrumentally." (Hutchinson & Huberman, 1994, p.28). There are three different desired outcomes for knowledge dissemination: having increased awareness, being able to make an informed choice among other alternatives, and exchanging of materials and information (Hutchinson & Huberman, 1994). The difference with knowledge flow is in the active and purposeful nature of knowledge dissemination.

In this study, research on the two discussed concepts will be grouped under the term *knowledge sharing*. The following section will address which factors potentially hinder or enable knowledge sharing.

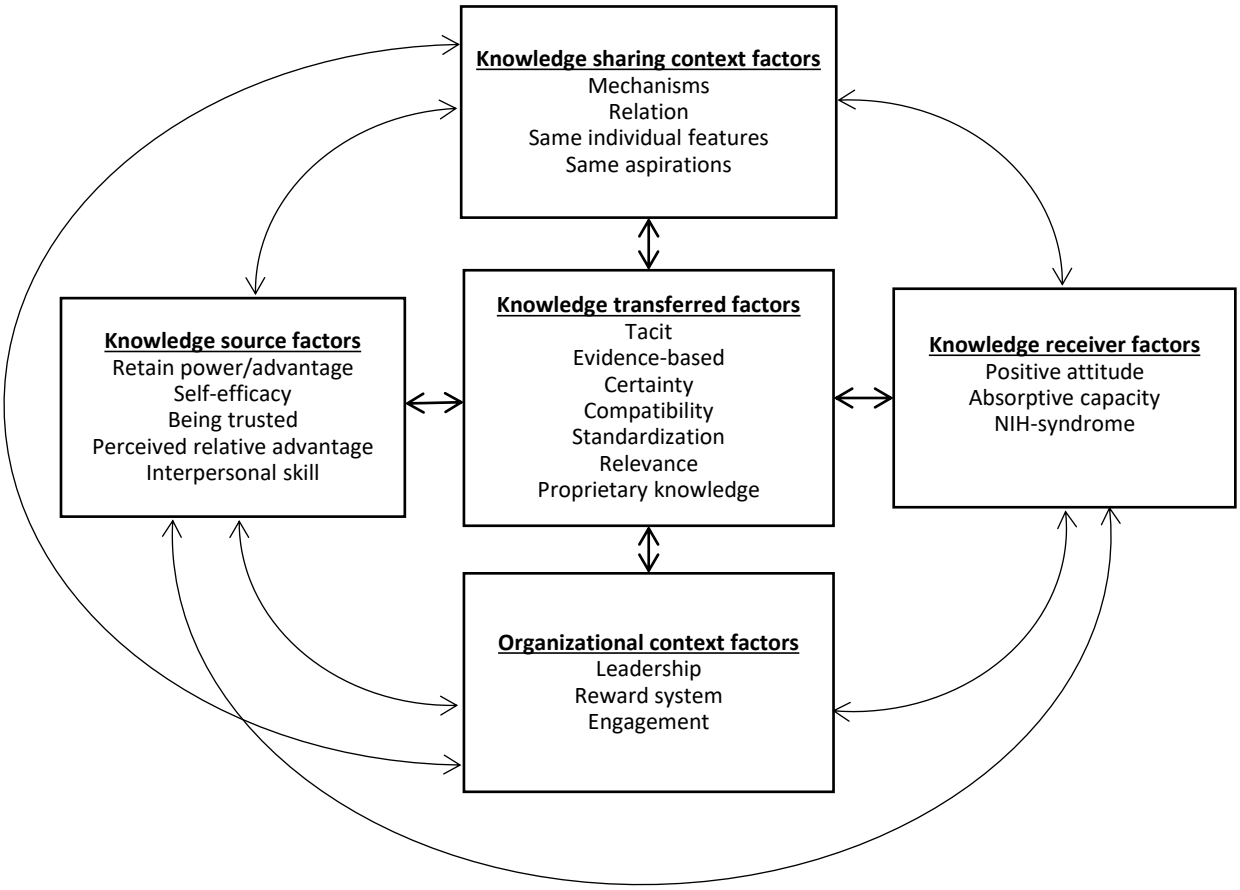
Influencing factors

Two studies used the Cultural-historical activity theory (CHAT) to classify potential knowledge sharing factors (Lin et al., 2012; Lin, Tan & Chang, 2008). CHAT is a theory used to give insight into complex activities, which is assumed to be a suitable theoretical approach

for complex processes such as knowledge sharing (Hasan & Gould, 2001). It is based on the assumption that all complex human activity is mediated by different kinds of contextual and environmental influences (Dochy, Gijbels, Segers & Van den Bossche, 2011). An activity system always includes a subject and an object that is mediated by different factors. In this case, the subject is the knowledge source, which is the person or group that shares the knowledge with someone else (Lin et al., 2008). The object is the knowledge receiver, which is the person or group that the knowledge gets shared with. Because three generations of research have been focussing on the development of CHAT-theory, there is a solid theoretical basis, which will be used as a framework for this study (Dochy, Gijbels, Segers & Van den Bossche, 2011).

Figure 1

Conceptual framework for factors influencing knowledge sharing



Note. Adjusted based on "An exploratory model of knowledge flow barriers within healthcare organizations," by C. Lin, B. Tan & S. Chang, 2008, *Information & Management*, *45*(5), p.337.

Lin et al. (2008) conducted an explorative study on knowledge sharing barriers. They used the CHAT-theory to map an activity system that distinguishes five different categories.

Next, Lin et al. (2012) conducted a systematic literature review on knowledge sharing barriers, in which they confirm the five-category classification of Lin et al. (2008). This classification of knowledge sharing barriers is the basis for the theoretical framework of this study. Each category of factors will be discussed in light of knowledge sharing.

The first category of factors is the **knowledge sharing context**. These are the contextual factors that can influence the route between the source and the receiver (Lin et al., 2008). It is thus about the bond between knowledge source and knowledge receiver and how the knowledge is transferred, but not about the content of the knowledge. *Mechanisms*, the first factor in this category, involves all the mechanisms needed to pass knowledge from person to person (Lin et al., 2012). It involves the IT systems that are required to retrieve up-to-date information, but also (un)scheduled meetings and seminars (Lin et al., 2008; Lin et al., 2012). The availability of well-functioning mechanisms could smoothen the route between the source and receiver and thereby positively influence knowledge sharing. Another knowledge sharing context factor identified by Lin et al. (2008) is *relation*, which is the quality of the personal relationships between knowledge sources and knowledge receivers. A good personal relationship could lead to smoother knowledge sharing. On the other hand it could lead to dual roles as a colleague and as a friend, which could negatively influence knowledge sharing when the communication is more about amicable topics rather than professional topics. Interpersonal processes that take place to exchange and discuss information, such as empathy and motivating the other, are also part of the *relation* factor (Hutchinson & Huberman, 1994). Having the *same individual features*, which are personal similarities such as gender or educational background, can positively influence the route between knowledge source and receiver (Ceptureanu, Ceptureanu, Olaru and Popescu, 2018). These similarities can lead to a smoother route between knowledge source and knowledge receiver. The same goes for having the *same aspirations*. For example, knowledge sharing can be enabled when both persons aim to innovate their practice.

The category of **knowledge source** factors involves the willingness of a group or individual to contribute to the organisation by sharing knowledge (Lin et al., 2012). This willingness can be influenced by the motive to *retain power or advantage*. Especially in a situation where there is a feeling of competition, knowing more than someone else can give a person more power or certain benefits. This way, knowledge sharing can be used as a strategic tool to retain or gain power or advantage. Also, the feeling to (not) be competent (*self-efficacy*) and to (not) be *trusted* by others can influence knowledge sharing (Lin et al., 2012;

Lin, Hung & Chen, 2009). In this case, more self-efficacy and trust will lead to more knowledge sharing, and less self-efficacy and trust will lead to less knowledge sharing. Also the *perceived relative advantage* has an effect, which is an estimation of the knowledge source about how innovative or valuable the knowledge is (Lin et al., 2009). The more useful the knowledge source estimates the knowledge to be, the likelier it is that this person will share it. A final influencing factor for the knowledge source is *interpersonal skill*, which are skills such as listening and summarizing, that help to exchange information in an effective way (Ceptureanu et al., 2018).

Knowledge transferred is about the content of the knowledge. *Tacit* knowledge is complex, intangible and action-related knowledge that is implicit in nature, which makes it difficult to share (Lin et al., 2008; Saini et al., 2019). *Evidence-based knowledge*, which is knowledge supported by scientific data or practical research within the school, can affect how useful the knowledge seems to the receiver (Ceptureanu et al., 2018; Lin et al., 2008). In general, evidence-based knowledge is perceived as more valuable. But when something is evidence-based, it can still be ambiguous, which impacts the *certainty* of the content (Lin et al., 2012; Lin et al., 2008). For example, when the outcomes of practical research can be interpreted in multiple ways, the content is evidence-based, but also ambiguous. *Compatibility* is about how the knowledge connects to the existing values of an organisation (Lin et al., 2009). The better this connection between the content and the organisation's values, the easier it is to share. *Standardised* knowledge is applicable to multiple contexts, while unstandardised knowledge must be adapted to a specific situation (Lin et al., 2008). For example, setting goals by using the SMART acronym (specific, measurable, attainable, relevant, timebound), is applicable to any subject in secondary school, and thus standardized (Fielding, 2001). While unstandardized knowledge such as how to properly guide a handstand in gymnastics, is applicable to one subject only. This often causes standardised knowledge to be more suitable to share than unstandardised knowledge. Whether the knowledge connects to the situation in practice is included in the factor *relevance*, which positively influences knowledge sharing (Hutchinson & Huberman, 1994). Lastly, *proprietary knowledge* is the knowledge owned by someone or something in an exclusive way. Sharing this knowledge can create a vulnerable situation for the knowledge source and, therefore, negatively influences knowledge sharing (Ceptureanu et al., 2018).

Knowledge receiver factors are features from the person or group with which the knowledge is shared. When the knowledge receiver has an active and *positive attitude*

towards sharing insights with each other, this has a positive influence on knowledge sharing (Lin et al., 2008). The *capacity to absorb* new knowledge is formed by whether the knowledge receiver has enough prior knowledge in a particular field to estimate the importance of the information being shared (Lin et al., 2008). The better this capacity or prior knowledge, the more likely it is that the knowledge will be shared with a person. A last negatively influencing factor is the *not-invented-here (NIH) syndrome*, which makes the receiver anxious about accepting the knowledge that was created outside their organisation or context (Lin et al., 2008).

Finally, **organisational context** factors are the cultural traits, values and protocols of a company or organisation that influence the knowledge sharing process (Lin et al., 2008). *Leadership* and *reward systems* that actively promote knowledge sharing stimulate individuals to share their knowledge (Lin et al., 2008). Brown, MacGregor and Flood (2020) also state that effective leadership is needed for PLCs to function and spread their knowledge further. Effective school leaders facilitate knowledge sharing in their schools, for example by encouraging colleagues to take part in knowledge sharing activities, and providing the staff with enough moments to interact formally and informally (Brown et al., 2020). *Engagement* can be provided by the organisation, which is the number and intensity of hands-on activities that people do to get in touch with the knowledge or materials (Hutchinson & Huberman, 1994). These activities can positively influence knowledge sharing.

Research question

This study aims to identify influencing factors to knowledge sharing in PLCs in the context of secondary education. The central question in this research is: Which factors influence knowledge sharing from PLC participants to the rest of the teaching staff in secondary education? These factors can be either enabling, hindering, or perhaps both.

Method

Research design

The data gathering of this exploratory, descriptive research included in-depth interviews and document analysis. Although existing theoretical findings were used to guide the data collection, it was expected that unpredictable information would be found, because in literature no research was found that explicitly focused on knowledge sharing in a secondary school PLC context. Interviews were conducted since it was desired to keep an open mind to new information. The interviews were semi-structured so that there was space for follow-up questions while ensuring that all topics were covered by the pre-formulated questions (Baarda, De Goede, & Teunissen, 2005). The document analysis was focused on written forms of communication about the knowledge sharing process in the PLCs. This was chosen because knowledge sharing does not only take place through oral communication, but also through written communication (Lin, Wu & Yen, 2012; Shin, Holden, & Schmidt, 2001).

Research context

The research context for this study was a secondary school community with two locations in the Netherlands. This school strives for a school climate where teachers extensively share their knowledge. This is also reflected in their school policy. The policy states that the teachers are responsible for the educational quality, both as individuals and as members of functional units such as PLCs in which they collaborate with colleagues. Within-school Professional Learning Communities (PLCs) were implemented at the school to enable extensive knowledge sharing between teachers. While new knowledge is being gathered, shared, and used within the PLC, the vice-principal of research and development notices that this knowledge often does not extend beyond the PLC (personal communication, November 26, 2019). The school intends that the new insights of their PLCs will eventually be known and used by staff members who can benefit from it. However, in the current situation, the PLCs struggle to expand their new knowledge beyond the PLC.

Respondents

The respondents were 12 teachers of a secondary school. Teachers who are members of the PLC will likely perceive different influencing factors to knowledge sharing than teachers who are not part of the PLC. Therefore both teachers from inside and outside the PLCs were interviewed. Six of the respondents were PLC participants from three different PLCs. The PLCs concern the following themes: data use in education, innovation & education, and the

national plan for education (a program set up by the Government to work on learning loss as a result of the COVID-19 pandemic). The other six respondents were teaching staff who are not part of a PLC themselves but for whom the PLC theme could be relevant. All respondents were selected by criterion sampling, in which the criterium for the first six respondents was that they were active members of at least one PLC (Onwuegbuzie & Leech, 2007). The other six respondents were selected by the criterion that they are not involved in a PLC. This was combined with convenience sampling, in which the availability and willingness of the potential respondents also determined who was selected as a respondent (Onwuegbuzie & Leech, 2007). Each respondent was assigned a respondent code, as shown in Table 1.

Table 1

Respondents interviewed.

Respondent code	(Non-)PLC participant	PLC theme	Working in education (years)
PD1	Participant	Data	16
PD2	Participant	Data	2
ND1	Non-participant	Data	40
ND2	Non-participant	Data	32
PI1	Participant	Innovation & education	9
PI2	Participant	Innovation & education	2
NI1	Non-participant	Innovation & education	20
NI2	Non-participant	Innovation & education	30
PN1	Participant	National plan for education	10
PN2	Participant	National plan for education	20
NN1	Non-participant	National plan for education	25
NN2	Non-participant	National plan for education	30

Instrumentation and data collection

Two interview guides were used in this study: one is aimed at the teachers who are part of a PLC. The other is aimed at teachers who are not members of the PLC themselves but for whom the PLC theme could be relevant.

The interview questions were divided into two parts. The first part consisted of rather broad questions focussed on how the respondents feel about knowledge sharing from PLCs, what kind of knowledge is shared and how it is shared. Examples of questions in the first part are: “How do you pass your knowledge to others?” and “How do you feel about sharing knowledge from PLCs with other colleagues?”. These questions are broad and not focused on one specific topic found in the literature. The second part paid attention specifically to each of the five main factor categories: knowledge sharing context, knowledge source, knowledge transferred, knowledge receiver, and organisational context. In the second part of the interview, a question was, for example: “What does the school management do to support knowledge sharing?”. This question is focused on the category of organisational context factors.

Pilot interviews were conducted with two secondary school teachers to test the interview guides. The first pilot, to test the interview guide for PLC participants, was conducted with a teacher at the research school who has had PLC experience in the past but is not active in a PLC anymore. In response to this pilot, a follow-up question was added in the first part, after questioning whether attention is paid to knowledge sharing in their PLC meetings. In the second part of this interview guide, two questions were moved to a different topic to create a more logical order. The second pilot was conducted with a secondary school teacher who is not involved in the research school to test the interview guide for teachers outside the PLC. In response to this pilot, a question was added about one’s perception of what a PLC is. This was added to ensure that the respondent and researcher were on the same page. Also, in this interview guide, two questions were moved to create a more logical order. Finally, a question on the respondent’s attitude towards knowledge sharing was added in the second part.

The interviews were conducted online. Before every interview, verbal consent was asked. During the interview a recording was made, and notes were taken. Also, the researcher kept a checklist of factors found in literature during the first part of the interview to keep track of which categories needed to be discussed in the second part of the interview.

The gathering of documents for document analysis happened both before and during the period in which the interviews were conducted. Before the interviews, the vice-principal was asked to deliver relevant documents about the PLCs. This resulted in five relevant documents: the school’s strategic plan, the strategic plans of both school locations, a checklist that the PLCs fill in before they start, and a PLC target plan. The respondents were also asked

whether any other documents could provide relevant information during the interviews. This did not result in additional documents.

Data analysis

After the data gathering, a non-comparative content analysis was conducted (Miles & Huberman, 1994). The interviews were transcribed verbatim, so hesitations, stuttering, and filler words were ignored. For the sake of the respondents' privacy, traceable information was not transcribed. This includes information about their personal life, the subject they teach, and personal details about their colleagues. Based on the theoretical framework, a coding scheme was made, which was applied to the written accounts of the interviews. The interviews were coded one by one, using ATLAS.ti. Examples of possible codes are "KSF_Power" (knowledge source factor Power) or "OCF_Leadership" (organisational context factor Leadership). Fragments were coded for multiple codes if more factors were involved in one statement. The same coding scheme was used for the analysis of the documents. When a statement or writing was found that did not match any of the codes in the coding system, it was considered whether a new code had to be created. This way, both literature and the data were used to develop the coding scheme, until there was code saturation. An inductive and deductive method of coding were thus combined (Baarda et al., 2005). The codes were brought together under the five categories: knowledge sharing context, knowledge source, knowledge transferred, knowledge receiver, and organisational context. For the new factors that were found, it was be determined whether they concern one of the five categories, or a new category. The factors found in interviews with PLC participants were compared to the non-PLC participants. Also, the factors per PLC were compared to each other. This resulted in a proposed framework for knowledge sharing from secondary school PLCs to other colleagues.

Reliability and validity

For all interviews the same predefined interview guide was used. Content validity was ensured by basing the interview guide on the theoretical framework. To ensure the reliability of this study, the intercoder reliability was checked. Two interviews were coded by two researchers, which covers around 16% of the data. A Cohen's Kappa of 0.78 was calculated, which meets the satisfactory threshold of 0.70 that is generally applied (Grimmer, King, & Superti, 2015).

Results

In this section, the results are summarised for each factor category.

Knowledge sharing context

Table 2

Results: Knowledge sharing context factors influencing knowledge sharing in PLCs.

Factor	Mentioned by	Enabling/hindering/both
Mechanisms	PD1, PD2, ND1, ND2, PI1, PI2, NI1, NI2, PN2, NN1, NN2	Enabling
Relation	PD2, ND1, ND2, PI1, NI1, NI2, NN1, PN1, PN2	Both
Same individual features	ND1, PI1, NI1, NI2, PN1, PN2, NN1, NN2	Enabling
Same aspirations	ND2, PN2, NN2	Enabling

Respondents stated that certain **mechanisms** help them to pass or receive knowledge. The availability of well-functioning mechanisms is an enabling factor for knowledge sharing because it smoothens the route between knowledge source and knowledge receiver. The mentioned mechanisms included newsletters, plenary sessions, one-on-one conversations, team meetings, and IT systems such as e-mail, student monitoring systems, and video conferencing tools. What makes these systems well-functioning seems to depend on personal preferences. Some respondents prefer visual tools such as PowerPoints (ND1, NI2), because it helps them to interpret the information. While others prefer one-on-one conversations, because it allows one to give opinions and ask follow-up questions easily (PI1, PN2, NN1). Delivery through mail and newsletters was seen as a not-preferred mechanism by most, while NI1 states that s/he prefers this mechanism because “It provides the possibility to read it back and you can hold people to their agreements.” There were also different opinions on using a multitude of knowledge sharing platforms within the school. NN2 states that a multitude of platforms makes it difficult to keep track of where to find which information. While a high number of platforms also makes it possible to share information in different formats with colleagues (PI2).

Good quality of the relationship between knowledge source and knowledge receiver (**Relation**) was perceived as enabling by most because they interact more often, and it feels safe to share knowledge with these people. As NI1 expressed: “It feels safer to share with someone who you connect with on a personal level”. However, it was also seen as hindering by some because they communicate about private topics rather than professional topics, which can cause the avoidance of critical questions. PI2 for example stated that “It is often more

difficult to share knowledge with someone you know well, because they immediately assume something from you without extensive explanation."

Having the **same individual features** such as age and hobbies was mentioned only as an enabling factor, because it offers more common ground and reasons to share insights with each other. NN1 for example stated that s/he finds people with the same sense of humour easier to talk to. Multiple respondents mentioned that they are more likely to share insights with people who teach the same subject (ND1, NI2, NN2).

Having the **same aspirations** with regard to educational innovation as well as the goal of the PLCs was seen as enabling, because having the same educational vision promotes exchanging views (NN2).

Knowledge source factors

Table 3

Results: Knowledge source factors influencing knowledge sharing in PLCs.

Factor	Mentioned by	Enabling/hindering/both
Retain power/advantage	-	-
Self-efficacy	PD1, PD2, ND1, ND2, PN2	Enabling
Being trusted	ND2, NI1	Enabling
Perceived relative advantage	PD1, PD2, PI1, PI2, PN1, PN2	Enabling
Interpersonal skill	PD2, ND1, PI1	Enabling

Retaining power/advantage was not mentioned as an influencing factor. Therefore this factor will not be included in the model.

The **self-efficacy** of the knowledge source was mentioned as an enabling factor, but mainly by participants from the data use in education PLC. Self-efficacy stimulates knowledge sharing, because feeling competent to share or being confident about one's knowledge makes it easier for the knowledge source to start sharing with others. As one respondent stated: "It helped that we felt like we knew what we were talking about" (PD1). While the absence of self-efficacy makes it more complicated to share insights: "They [PLC colleagues] wonder what happens if they get into an argument. Maybe the other person doesn't like that. Or they think they don't know much about it, so they get insecure about their own expertise" (PD2).

Two non-PLC participants mentioned that their **trust** in the knowledge source is enabling, as they tend to place more value on the ideas of the people that they trust. This trust

was based on previous experiences with that person, or the things that they had said. ND2: “I have faith in them, in those people. Then I think; you've thought of that well, I hadn't thought of it myself, but that is indeed the direction we have to go”.

Multiple PLC participants stated that they are more inclined to share their knowledge when they feel like the knowledge is innovative or valuable (**perceived relative advantage**), for example because they have had good experiences themselves with certain novelties. As PI2 mentioned: “What motivates me is that I personally think it's a very useful platform, the whole VR.” Also PD1 shares knowledge because s/he is convinced of its usefulness: “I am eager to let colleagues know that I have found something, discovered something and that I think we should do something with it [implementing VR applications]”.

Having strong **interpersonal skills** such as listening, summarizing and sensing others’ needs was seen as enabling for knowledge sharing, because a person with strong skills pays more attention to exchanging information effectively. PI1: “I have to give space and keep listening to what I get back from the PLC and the team to see if they go along with what we do in a PLC.”

Knowledge transferred factors

Table 4

Results: Knowledge transferred factors influencing knowledge sharing in PLCs.

Factor	Mentioned by	Enabling/hindering/both
Tacit nature	PD1, PI1, PI2 NI1, NI2, NN1, PN1	Hindering
Evidence-based	PD1, PD2, ND1, ND2, NI2, PN2, NN1, NN2, School’s strategic plan	Enabling
Certainty	PD1	Enabling
Compatibility	PD1, PD2, School’s strategic plan, Strategic plans of both school locations, PLC checklist	Enabling
Standardisation	PI1, NN2	Both
Relevance	PD1, ND2, PI1, NI1, NI2, PN1, NN2	Enabling
Proprietary knowledge	PD1	Hindering
Priority	ND2, PI2, PN1	Enabling

Knowledge with a **tacit nature** was found to be a hindering factor, because the intangibility and complexity make it challenging to share with others. Examples of tacit knowledge that came up, are tailoring a teaching method to the target audience, and analysing new datasets. Both knowledge sources and receivers preferred more explicit knowledge:

“There has to be something tangible; otherwise it becomes such a fuzzy whole. I would like to know what I can do with it in my classes, with my students” (NI1).

Evidence-based content was mentioned as enabling, because it can be justified by numbers and facts. It can also help to convince others of PLC insights (PN2). PD2 places the annotation that evidence-based content only enables knowledge sharing when meaning has been given to the data: “Sharing the knowledge that I have not yet made sense of myself is difficult. People often find it difficult to get dry data”. The school’s strategic plan also reflects that evidence-based knowledge is shared within the school: “Constant improvement and professionalisation are secured in the quality cycle and are visualised by clear and reliable instruments. The information resulting from this is discussed widely in the school.”

PD1 mentioned that knowledge would not be shared until it is **certain**, which makes certainty an enabling factor: “You're navel-gazing, looking at the data and figuring out what you can do with it. You're not sharing that much because you're still searching.”

Compatibility of the content with the school’s values was found as an enabling factor, because when the content aligns with the educational vision of the school, it will be spread more broadly. Four of the documents showed that sharing insights from PLCs aligns with the school’s values. The PLC checklist includes a question about the alignment of the PLC purpose with the school’s values, the location plans mention professionalisation, PLCs and learning from each other in the goals that they want to achieve. None of the respondents mentioned compatibility.

Concerning **standardisation**, it was mentioned that on the one hand it is easier to share knowledge that applies to multiple contexts, such as techniques for differentiating instruction (NN2). On the other hand, knowledge might be likelier to be adopted when it is specified to their own context or subject, such as a VR-system specifically designed for teaching history (PI1).

Content that connects with the situation in practice (**relevance**) was mentioned to be enabling, because it makes it easier to use the information in one’s field of expertise. As NI2 explains about a presentation that did not connect with the real-life situation: “I'm not searching for that kind of example. I also want to hear the struggle... Sometimes it is presented in such a romantic way, and I think: we don't have those students. That’s not how it works in practice at all.”

Proprietary knowledge can be a hindering factor, because when information about one specific person or subject section is involved, it creates a vulnerable situation. PD1 stated

that s/he wants to share knowledge as transparently as possible, but when it involves proprietary knowledge, PD1 suggests that it is first shared with the persons concerned before it is broadly shared.

A new factor in this category is **priority**, which occurs when shared content is prioritised over other content, by the person sharing or receiving the knowledge. This enabling factor was most apparent in the PLC about the national plan for education. This group seems to share their knowledge more because it is concerned with learning loss related to the Covid-19 pandemic that affects all teachers: "They [other teachers] see the necessity of this, because they see that certain students really lag in their subjects. So they do want to make a real effort to catch up" (PN1).

Knowledge receiver factors

Table 5

Results: Knowledge receiver factors influencing knowledge sharing in PLCs.

Factor	Mentioned by	Enabling/hindering/both
NIH-syndrome	-	-
Positive attitude	PD1, PD2, ND1, ND2, PI1, PI2, NI1, NI2, PN1, PN2, NN1, NN2, School's strategic plan	Enabling
Absorptive capacity	PD1, PD2, ND2, PI1	Enabling

The **NIH-syndrome** was not mentioned by any of the respondents as an influencing factor.

A **positive attitude** of the knowledge receiver was mentioned as an enabling factor by all respondents. PLC participants mention that it helps them to share knowledge when others are positive towards it: "When people are curious about it and want to know the outcomes, that certainly helps" (PD1). Non-PLC participants state that they are mostly open and positive towards new knowledge, even though some find it hard to maintain trust in educational innovation after years of working in education: "My attitude towards it [knowledge sharing from PLCs] is positive anyway. But I do notice after so many years of teaching how difficult it is to implement new things" (ND2). The school's strategic plan also stresses the open attitude of their teachers: "We are curious and open to what comes our way and want to learn from it. We continue to participate intensively in (scientific) research and to cooperate with social partners." Although this statement is not explicitly connected to PLCs, this is one of the ways in which the school participates in scientific research.

The **absorptive capacity** was mentioned as an enabling factor, because it is essential to connect with the knowledge receiver's prior knowledge to ensure that people start taking action (PI1). If there is no absorptive capacity, PD2 feels like s/he overwhelms people by sharing information.

Organisational context factors

Table 6

Results: Organizational context factors influencing knowledge sharing in PLCs.

Factor	Mentioned by	Enabling/hindering/both
Reward system	-	-
Leadership	PD1, PD2, ND2, PI1, NI2, PN1, PN2, NN2, School's strategic plan	Both
Engagement	PD1, PD2, ND1, ND2, PI1, PI2, NI1, NI2, PN1, PN2, NN1, NN2, Strategic plan location I	Enabling
Workload	PD2, ND2, PI1, PI2, PN1, PN2, NN1, NN2	Hindering
Hybrid working	ND1, PI2, ND2, NI1, PN1, PN2	Both

A **reward system** was not mentioned by any of the respondents. **Leadership** appears to be important at the within-PLC level, team-level and the school board-level. It was seen as an enabling factor when leaders are actively involved in the PLCs (PN1) and when shared leadership is experienced as multiple people feel responsible for the goal of the PLC (NN2). According to the school's strategic plan, shared leadership is also what the school strives for. This plan explains that the school use a form of shared leadership in which joint responsibility is held rather than a more traditional hierarchical structure. On a PLC-level, PD1 appreciated that one colleague takes the lead within the PLC: "We had asked someone from our midst if they wanted to pull the cart, so to lead the process. Just direct us, tell us what to do." However, leadership can also be hindering when shared leadership and responsibility are no longer felt, as NN2 expressed: "I think the danger is that it becomes a one-man project for someone who pulls it too much towards their own interpretation." Also NI2 felt like the shared leadership in practice is somewhat different than on paper: "I sometimes find it difficult that in a conversation with the board, you find out that the decisions have already been made".

Engagement was mentioned by all respondents as an enabling factor. Non-PLC participants say that organised hands-on activities would be a good way to learn from PLCs: "A slightly more active role in that, for example by organising a meeting so that you can

indeed take a step further, that would be a good thing I think" (NN2). Also PLC participants feel that hands-on activities are enabling for sharing their knowledge: "It's well-coordinated too, time is set aside for it. These PLC-afternoons or PLC-days. Then we can really get involved, then it doesn't have to be done in between the daily activities" (PI2). The strategic plan of one location mentions the engagement regarding PLCs. It states that teachers participate in settings where they learn from each other, e.g. PLCs. However, no attention is paid to how such engagement could be implemented to spread knowledge across the PLCs.

In this factor category, two new factors were found. The first is **workload**, which involves the influence of a great burden of tasks and duties on knowledge sharing. This was perceived as a hindering factor by both PLC participants and non-PLC participants. Participants indicate that the multitude of work hinders the PLC to get further: "What makes it difficult for us to make progress as a PLC, is the multiplicity of developments. Suppose you have to develop yourself in 6 different things. In that case, you end up delivering a different quality than when you get to work on one thing." Non-PLC participants mention that they have too many extra tasks, as NN2 answers to the question of what hinders knowledge sharing with PLCs: "It is just the workload, the delusion of the day. The moment you could be paying attention to it (knowledge sharing), you also have four other things to do, so you tend to choose what's most important the next day."

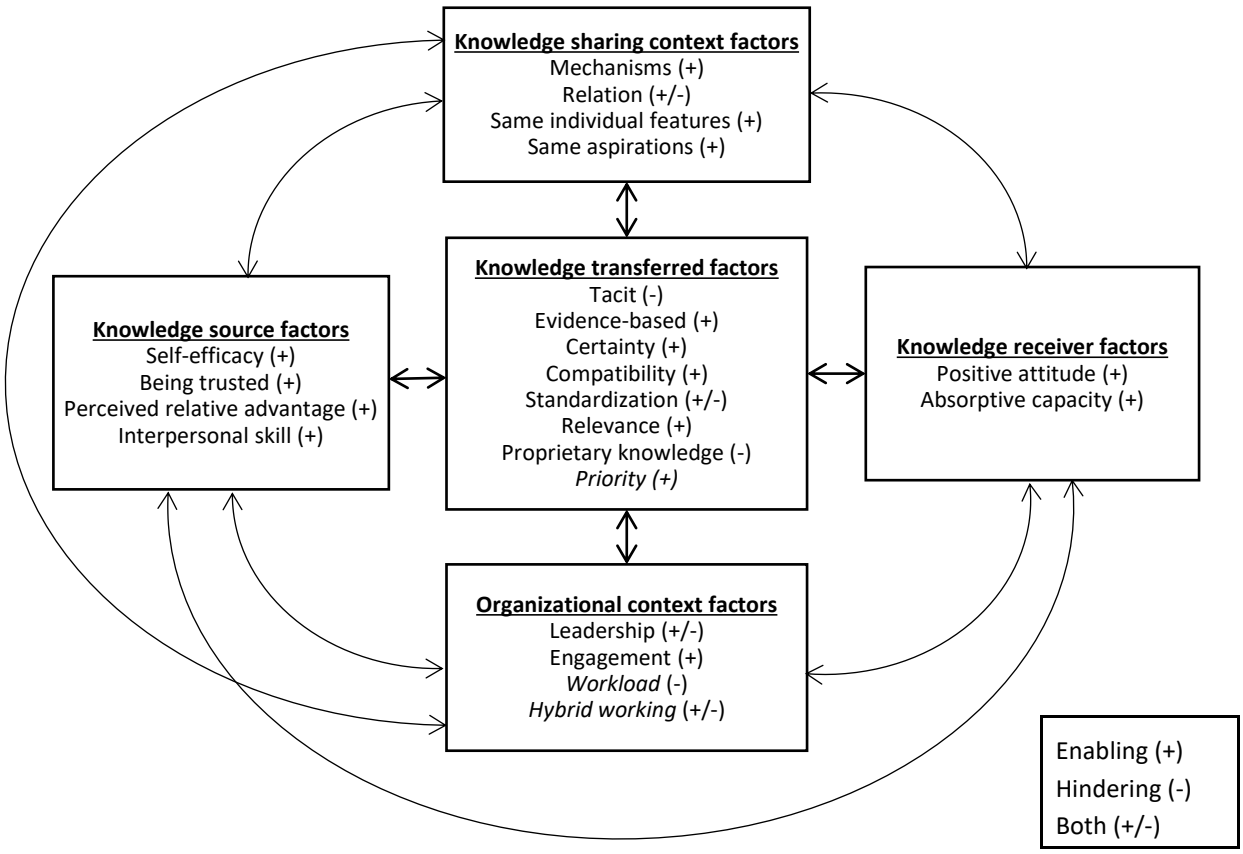
The second new factor is **hybrid working**, which is the influence of working partly on location and partly from home. Respondents who perceive this way of working as a hindering factor state that working hybrid causes you to no longer meet in real life and therefore share less knowledge. Some respondents viewed this way of working as an enabling factor, because it opens other opportunities to share knowledge: "For the PLC we needed to know something, but there was no more meeting scheduled. So then, after the last class we all logged in for 10 minutes to discuss something that could not be done by mail. So the knowledge does get shared easier that way" (PN1).

Conclusion and discussion

The goal of this study was to identify factors that influence knowledge sharing by PLCs in the context of secondary education, by exploring which factors influence knowledge sharing from PLC participants to the rest of the teaching staff. Previously published literature on knowledge sharing was used to classify potential influencing factors. Interviews and document analysis have led to insights on if -and how- these factors influence knowledge sharing from PLC participants to their non-PLC participating colleagues in secondary education. Merging the results, this study has led to a suggested framework for factors influencing knowledge sharing in a PLC context, as shown in Figure 2. The new factors that were found in this study are presented in Italics.

Figure 2

Proposed framework for factors influencing knowledge sharing in a PLC context



Note. Adjusted based on "An exploratory model of knowledge flow barriers within healthcare organizations," by C. Lin, B. Tan & S. Chang, 2008, *Information & Management*, *45*(5), p.337.

The five main categories for knowledge sharing factors as suggested in previously published research are also recognised in the context of this study: secondary-education PLCs (Lin et al., 2008; Lin et al., 2012). The distinguished categories are knowledge sharing context, knowledge source, knowledge transferred, knowledge receiver and organisational context. For the total of 22 factors within these categories, it became more clear how they enable or hinder knowledge sharing, as described in the results section. The model of Lin et al. (2008) was mostly confirmed, but there was no evidence found for the variables *retain power/advantage*, the *NIH-syndrome* and a *reward system*. Also three variables were added, which are *priority*, *workload* and *hybrid working*. Our overall results suggest five broad themes: carefully select the knowledge sharing mechanisms, the role of workplace friendship, the importance of leadership on multiple levels, the high workload in education and the phenomenon of hybrid working.

Carefully select knowledge sharing mechanisms

Findings show that well-functioning mechanisms such as meetings and IT-systems are an important enabling factor. Noteworthy is that written forms of communication (such as newsletters) are not preferred, while this is the most common way of communicating in many schools. Organisations tend to choose newsletters to share PLC insights, because this type of mechanism allows for formal and structured knowledge sharing (Balle, Steffen, Curado & Oliveira, 2019). However, both PLC participants and non-PLC participants prefer more social and visual mechanisms such as PowerPoint presentations, one-on-one conversations and team meetings. Social mechanisms such as the earlier mentioned conversations and team meetings are a suitable way to share more complex knowledge in a quick way (Balle et al., 2019). Visual mechanisms such as PowerPoint presentations allow the knowledge receiver to integrate a visual representation of the knowledge in their memory, which is an important process for learning (Mayer, 2021). To optimally use these visual mechanisms for knowledge sharing, it is important that visual information and verbal explanations are delivered simultaneously delivered during the presentation, to not overflow the working memory capacity of the receiver (Mayer, 2021). Thus, instead of communicating PLC insights through documents and newsletters, teachers prefer these insights to be shared in interactive and visual ways.

The role of workplace friendships

Another conclusion of this research is that a good relationship between the knowledge source and the receiver is enabling for knowledge sharing, up to the point where it becomes a pure friendship. Conditional for a workplace friendship, as opposed to a solely friendship-based relationship, is that both work-related and friendship information exchanges take place (Methot, Lepine, Podsakoff & Christian, 2016). As long as both information exchanges take place, a good relationship between knowledge source and receiver is enabling for knowledge sharing, because they trust each other and they talk to each other often. However, when there is a lack of work-related information exchange, it can become a hindering factor because of the avoidance of critical questions and because only private matters are discussed. This turning point in workplace friendships, from positive effects -such as job satisfaction-, to negative effects -such as difficulty in separating the roles of colleague and friend- was also found in other research (Methot et al., 2016; Zarankin & Kunkel, 2019). A potential risk of workplace friendships can be a lack of professional communication in the light of knowledge sharing. However, when no professional communication takes place at all, this is referred to as a pure friendship between two people who happen to work in the same place, rather than a workplace friendship.

The importance of leadership on multiple levels

Leadership plays a vital role in the knowledge sharing processes of PLCs, as expected based on previous literature (Brown, MacGregor & Flood, 2020; Van den Boom-Muilenburg, Poortman, De Vries, Schildkamp & Van Veen, 2021). In this study, leadership appeared as an influencing factor on three levels: the level of the PLC itself, the teams in the school, and the school board. This includes formally assigned leaders, such as the school board, but also informal leaders such as PLC participants who voluntarily pull the cart (Van den Boom-Muilenburg et al., 2021). Often, innovative projects such as PLCs are guided by the school board, on behalf of achieving the school's objectives (Dowling, 2016). This prevents the teaching staff from actively contributing because they do not feel responsible for the outcomes of the PLCs. Shared leadership that appears on multiple levels in the organisation as we see in this study, is a more effective way to mobilize knowledge and extend the reach of educational innovations, as opposed to more traditional and hierarchical leadership styles (Brown et al., 2020; Dowling, 2016). Shared leadership is associated with a feeling of joint responsibility and autonomy by Brown et al. (2020), which was mentioned by both PLC

participants and their non-PLC participating colleagues mentioned to be desirable. Leadership is of influence on other factors in the framework as well. Leaders can for example establish PLC activities in timetables, to foster engagement and embed the PLC activities in the organisation (Van den Boom-Muilenburg et al., 2021). Also, leaders can play a role in prioritising which PLC-topics to focus on, which could lower the workload that teachers experience.

High workload hinders knowledge sharing

Workload is a new factor that was found in this study, which respondents experienced as hindering for knowledge sharing. The workload experienced amongst secondary school teachers in the Netherlands is higher than the Dutch average across other industries (TNO, 2019). Workload can be divided into quantitative workload, which is the amount of tasks, and qualitative workload which involves the complexity of the tasks (Glaser, Tatum, Nebeker, Sorenson & Aiello, 1999). Teachers experience high tasks requirements in quantity (quantitative workload), which does not leave them enough time to engage in PLC knowledge sharing. So, the workload is not in the complexity of the PLCs, but in the quantity of them. As mentioned previously, a prioritisation of which PLC-topics to focus on, could reduce the experienced quantitative workload.

Hybrid working: more than a combination of mechanisms

Another newly discovered factor in this study, is hybrid working. In this way of working, people can work either on location or remotely from their homes. It could be argued that hybrid working is a combination of social mechanisms such as real-life meetings, and online mechanisms such as IT-systems. However, it is bigger than that, because it also involves the unpredictability of work schedules, less spontaneous and informal conversations and the uncertainty of whether this way of working is a permanent new thing to get used to (Cuéllar, Guzmán, Lizama & Faúndez, 2021). Hybrid working in education became increasingly conventional over the last couple of years due to the Covid-19 pandemic (Van der Spoel, Noroozi, Schuurink & Van Ginkel, 2020). It was found to influence knowledge sharing both positively and negatively. Some teachers experience the positive effects of this way of working in PLC knowledge sharing, because it offers possibilities to interact with others while not everyone is present at the school. On the other hand, there are also aspects to hybrid working that hinder knowledge sharing, because people do not spontaneously meet as often as they used to.

Practical implications

Although this study does not yet provide a firm empirical basis, it does offer some practical insights into the journey from individual knowledge-addition to collective knowledge-multiplication by PLCs (Dochy et al., 2011). First of all, the proposed framework gives insight into which factors are potentially hindering and/or stimulating knowledge sharing. When school leaders or policy officers are evaluating PLC outcomes, they should keep in mind that a multitude of factors can play a role in the knowledge sharing of the within-school PLCs. To do so, the proposed framework of this study can be used as a checklist to identify which factors are (not) present, as can be found in Appendix A. Second, this study shows that organizing activities in which the teaching staff can engage with new knowledge, is a good way to stimulate knowledge sharing for both PLC participants and non-PLC participants. This concerns activities such as team meetings, where time is set aside to share experiences and best practices on a specific PLC topic. A last practical insight of this study, is that formal and informal leadership on multiple levels in the organisation (PLC-level, team-level and board-level) plays an important role in PLC knowledge sharing. This so-called shared leadership creates a feeling of joint responsibility and autonomy, stimulating teachers to share their knowledge.

Limitations and future research

Before offering suggestions for future research, some methodological limitations should be addressed. The data collection of this study was conducted online, which may have been a barrier for respondents to share sensitive information with the researcher. Also, the research was conducted at a single school. Although this offered the opportunity to thoroughly investigate the processes in one specific context, the results cannot be generalized to the contexts of other schools. Furthermore, the findings are based largely on respondents' perceptions, which are subjective. Although document analysis was included, observations in PLC meetings, team meetings and in the faculty room might have added valuable information. Future research could include non-participatory observation in the research design.

Furthermore, the relations between certain factors or categories were not studied in this research. Instead, the relations between factor categories, as assumed by Lin et al. (2008), were adopted in this study. In this assumption, each category affects every other category. However, it is credible that one specific factor influences another factor within or outside of that category. For example, there could be an interaction between the limited absorptive

capacity of the knowledge receiver and the workload that they experience. Future research could further study such interactions.

In addition, the effect of hybrid working on knowledge sharing would be interesting to study more extensively, as this way of working is relatively new in education. This way of working was perceived as both enabling and hindering for knowledge sharing between teachers. Recent publications show the expected and experienced effects of hybrid education (Van der Spoel et al., 2020; Cuéllar, Guzmán, Lizama & Faúndez, 2021). However, these studies focussed on individual and educational processes such as student motivation and the implementation of technology, rather than intercollegiate processes like knowledge sharing.

Lastly, a respondent commented on losing trust in educational innovations over the years of working in education. In this respect, it is notable that all non-PLC participants in this study had been working in education for a longer time than the PLC participants. It was beyond the scope of this study to look at this further, but follow-up research could investigate the influence of working years in education, on trust in educational innovations and participation in PLCs.

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Appendix A:

A summary for practitioners, including a checklist of knowledge sharing factors

Sharing is caring: Welke factoren beïnvloeden kennisdeling van PLG-deelnemers naar hun collega's in het middelbaar onderwijs?

Een samenvatting voor de praktijk

Aanleiding

In een professionele leergemeenschap (PLG) delen docenten inzichten en reflecteren ze op de praktijk, met als doel om het onderwijs te verbeteren (De Neve, Devos & Tuytens, 2015). De kennis die gedeeld en ontwikkeld wordt in een PLG zou niet enkel bij de PLG-deelnemers moeten blijven, maar zich verder verspreiden over de hele school (Prenger, Poortman & Handelzalts, 2018). In deze studie is onderzocht welke factoren invloed hebben op de kennisdeling door PLG-deelnemers naar andere collega's.

Theoretische achtergrond

PLG: Een groep docenten die hun praktijk onder de loep nemen vanuit een kritisch oogpunt. Dit gebeurt in een doorgaand, reflectief en gezamenlijk proces, op een inclusieve manier (De Neve, Devos, & Tuytens, 2015).

Kennisdeling: Verworven kennis of informatie beschikbaar maken voor andere mensen binnen een organisatie (Ipe, 2003; Ryu, Ho & Han, 2003).

Theoretisch raamwerk

Het theoretisch raamwerk van deze studie is gebaseerd op een studie van Lin, Tan en Chang (2008). Hierin zijn factoren die van invloed zijn op kennisdeling gecategoriseerd in vijf groepen. Deze groepen zijn als volgt:

1. **Contextuele factoren**. Dit zijn de factoren die de route tussen de kennisbron en kennisontvanger beïnvloeden. Denk hierbij aan IT-systemen die nodig zijn om de kennis over te brengen, de band tussen de kennisbron en -ontvanger en het hebben van dezelfde persoonlijke kenmerken.
2. **Eigenschappen van de kennisbron.** De kennisbron is degene die de kennis deelt. Hieronder vallen bijvoorbeeld de interpersoonlijke vaardigheden van de kennisbron, het gevoel om vertrouwd te worden en het inschatten van hoeveel een ander aan jouw kennis zou hebben.
3. **De overgedragen kennis.** Hieronder vallen alle eigenschappen van de kennis die wordt gedeeld. Bijvoorbeeld of de kennis gestandaardiseerd is, of de kennis impliciet of expliciet is, en hoe relevant de kennis is.
4. **Eigenschappen van de kennisontvanger.** De kennisontvanger is degene waarmee de kennis wordt gedeeld. Onder deze categorie vallen bijvoorbeeld een positieve houding van de ontvanger, en de voorkennis van de ontvanger.

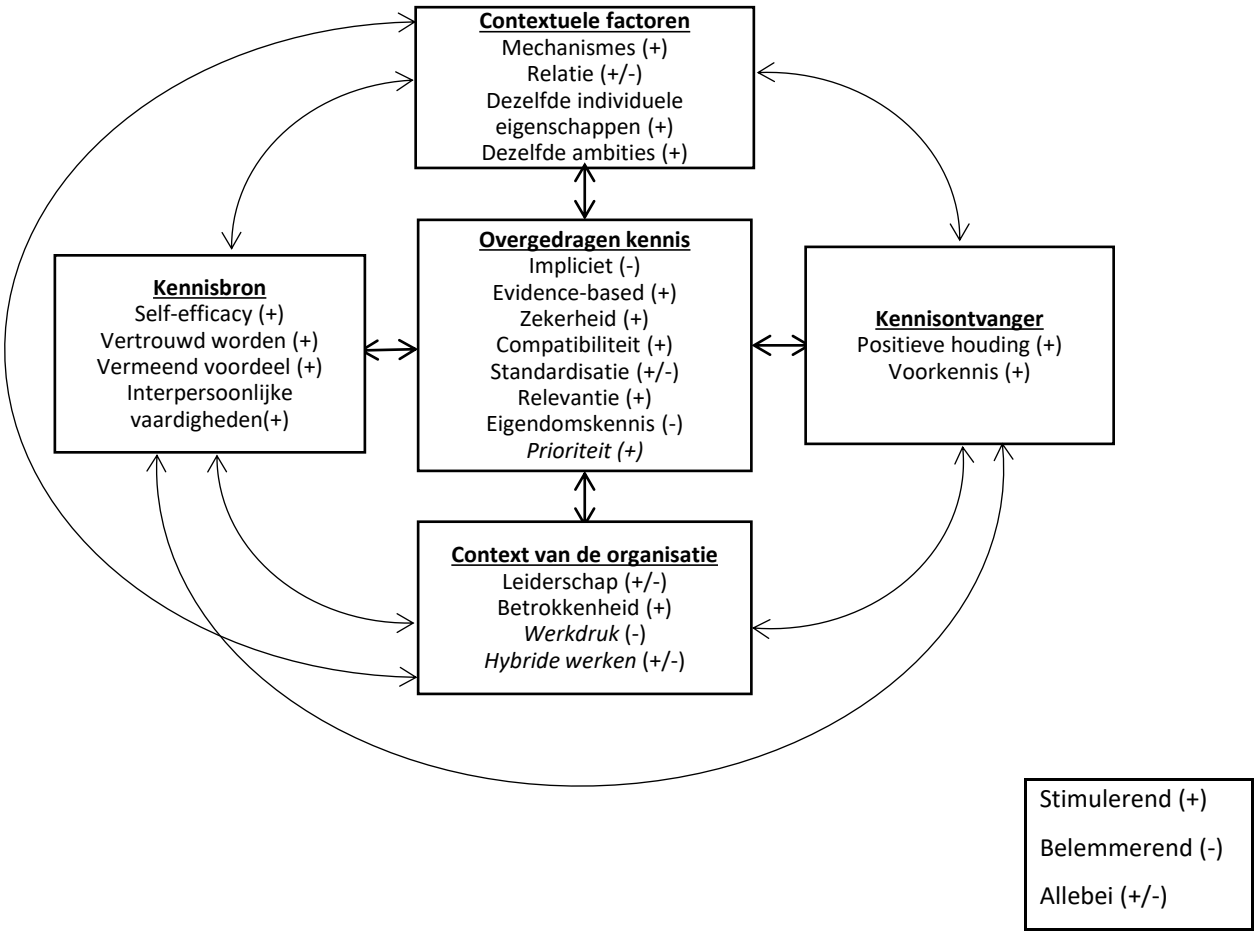
5. **Context van de organisatie.** Hieronder vallen de culturele eigenschappen, normen en waarden van de school. Bijvoorbeeld hoe er leiding wordt gegeven en of er activiteiten worden georganiseerd om kennis met elkaar te delen.

Methode

- **Interviews**
  - 6 respondenten die deelnemen aan een PLG.
    - 2 respondenten data PLG
    - 2 respondenten NPO
    - 2 respondenten onderwijs & innovatie
  - 6 respondenten die niet deelnemen aan een PLG.
- **Documentanalyse**
  - Locatieplan vestiging 1
  - Locatieplan vestiging 2
  - Schoolplan
  - Checklist voor PLG's
  - Werkplan voor PLG's

Resultaten

Hieronder staan de gevonden factoren weergegeven in een model. De factoren die nieuw zijn ten opzichte van het gebruikte raamwerk van Lin et al. (2008) zijn schuingedrukt. In de checklist die hierna volgt, staat beschreven wat er onder elke factor wordt verstaan.



Checklist

De gevonden resultaten kunnen gebruikt worden als een checklist voor PLG's of leidinggevende. Door te kijken aan welke factoren al bewust aandacht wordt besteed en op welke manier, kan worden nagegaan waar mogelijke verbeterpunten liggen die ten goede komen van de kennisdeling. Voor de factoren die (nog) niet aanwezig zijn kan vervolgens worden nagedacht op welke manier en door wie hier aandacht aan kan worden besteed, om deze factoren te verbeteren.

Contextuele factoren

- **Mechanismes**: zijn er goed werkende systemen waarmee kennis wordt overgedragen, zoals team meetings, IT-applicaties en één-op-één gesprekken?
- **Relatie**: is er een goede relatie tussen kennisbron en -ontvanger?
- **Dezelfde individuele eigenschappen**: hebben de kennisbron en -ontvanger dezelfde individuele eigenschappen (bijvoorbeeld leeftijd, geslacht en het vak dat ze geven)?
- **Dezelfde ambities**: hebben de kennisbron en -ontvanger dezelfde visie en dezelfde ambities op het gebied van onderwijsinnovatie?

Kennisbron

- **Self-efficacy**: heeft de kennisbron vertrouwen in zijn/haar eigen kunnen en expertise?
- **Vertrouwd worden**: heeft de kennisbron het gevoel dat hij/zij wordt vertrouwd?
- **Vermeend voordeel**: denkt de kennisbron dat de kennis nuttig zal zijn voor de ontvanger?
- **Interpersoonlijke vaardigheden**: beschikt de kennisbron over goede interpersoonlijke vaardigheden zoals vragen stellen, luisteren en samenvatten?

Overgedragen kennis

- **Impliciet**: is de kennis concreet? Impliciete kennis zoals het aanleren van een vaardigheid, is lastiger om over te dragen dan expliciete kennis zoals het vertellen van het doel van de PLG.
- **Evidence-based**: is de kennis onderbouwd door wetenschappelijk of praktijk onderzoek?
- **Zekerheid**: kan de kennis éénduidig worden geïnterpreteerd, en is het dus niet ambigu is?
- **Compatibiliteit**: sluit de kennis aan bij de normen en waarden van de organisatie?
- **Standaardisatie**: is de kennis toepasbaar op meerdere contexten?
- **Relevantie**: sluit de kennis aan op de situatie in de praktijk?
- **Eigendomskennis**: is de kennis algemeen eigendom? Kennis die exclusief van één persoon is, is lastiger over te dragen omdat het gevoelige situaties kan opleveren voor de kennisbron.
- **Prioriteit**: heeft de kennis prioriteit over andere kennis?

Kennisontvanger

- **Positieve houding**: heeft de kennisontvanger een positieve houding tegenover kennisdeling?
- **Voorkennis**: heeft de kennisontvanger voldoende voorkennis om de nieuwe kennis goed te kunnen opnemen?

Context van de organisatie

- **Leiderschap**: heerst er een gevoel van gedeeld leiderschap en gezamenlijke verantwoordelijkheid op PLG-niveau, teamniveau en schoolniveau?
- **Betrokkenheid**: worden er activiteiten voor kennisdeling georganiseerd binnen de school?
- **Werkdruk**: wordt er een lage werkdruk ervaren, zodat men tijd heeft om bezig te zijn met kennisdeling?
- **Hybride werken**: wordt er aandacht besteed aan de effecten van hybride werken op de interactie tussen kennisbron en -ontvanger?

Conclusies

1. **Het is belangrijk om de juiste mechanismes te selecteren waarmee de kennis wordt overgedragen.**
   Goedwerkende mechanismes zoals IT-systemen of teammeetings zijn van belang bij het overdragen van kennis. De voorkeur gaat hierbij niet uit naar geschreven communicatiemiddelen, zoals nieuwsbrieven. Zowel PLG-deelnemers als niet-deelnemers geven de voorkeur aan sociale mechanismes zoals team meetings, of visuele mechanismes zoals PowerPoint presentaties.
2. **De rol van werkvriendschappen.**
   Vriendschappen op het werk tussen de kennisbron en kennisontvanger kunnen zowel stimulerend als belemmerend werken voor kennisdeling. Zolang er zowel werk gerelateerde als vriendschappelijke gesprekken worden gevoerd, heeft het een stimulerende invloed. Een goede relatie zorgt er namelijk voor dat de kennisbron en -ontvanger elkaar vaker opzoeken en zich vertrouwd voelen met elkaar, waardoor ze meer kennis met elkaar delen. Echter, zodra de vriendschap op een niveau komt waar geen werk gerelateerde informatie meer wordt gedeeld, heeft het een belemmerende invloed op de kennisdeling. Vanaf dat punt wordt er namelijk enkel nog over privé onderwerpen gesproken, en is het lastiger om elkaar kritische vragen te stellen.
3. **Het belang van leiderschap op meerdere niveaus.**
   Leiderschap kwam als beïnvloedende factor naar voren op drie niveaus: binnen de PLG, binnen de teams, en binnen de school als geheel. Er is sprake van gespreid leiderschap, wat ervoor zorgt dat er een gevoel heerst van autonomie en gezamenlijke verantwoordelijkheid. Dit werkt stimulerend voor het delen van kennis. PLG-leiders, teamleiders en schoolleiders kunnen een rol spelen in de andere factoren die zijn gevonden in dit onderzoek. Zo kunnen zij bijvoorbeeld activiteiten faciliteren voor kennisdeling, helpen bij het aanbrengen van duidelijke prioriteiten en met hun collega's in gesprek gaan over de ervaren werkdruk.
4. **Hoge werkdruk in het onderwijs.**
   De hoge werkdruk die wordt ervaren in het onderwijs werkt belemmerend voor kennisdeling. Doordat docenten een hoog aantal taken hebben, voelen zij geen tijd en ruimte om actief deel te nemen aan de kennisdeling van PLG's. Het prioriteren van de PLG-onderwerpen kan helpen om deze werkdruk te verlagen.
5. **Hybride werken: meer dan een combinatie van mechanismes.**
   Bij hybride werken kunnen mensen zowel vanuit huis als op locatie werken. Deze manier van werken heeft een opmars gemaakt tijdens de Coronacrisis en is nu steeds gebruikelijker op veel scholen. Hybride werken zou kunnen worden gezien als een combinaties van meerdere mechanismes: online vergaderingen en vergaderingen in het echt, maar het is meer dan dat. Hybride werken brengt namelijk ook met zich mee dat werkroosters onvoorspelbaar zijn en dat collega's elkaar minder vaak spontaan ontmoeten. Daarnaast is er ook de algehele onzekerheid over of we moeten wennen aan deze nieuwe manier van werken of dat het iets tijdelijks zal zijn. De positieve invloed die wordt ervaren, is dat hybride werken nieuwe mogelijkheden geeft voor het beleggen van vergaderingen. Nu hoeft bijvoorbeeld niet iedereen meer op school aanwezig te zijn om met elkaar te kunnen vergaderen, en kunnen mensen ook snel vanuit huis even inbellen. De negatieve invloed die wordt ervaren, is dat mensen elkaar minder vaak spontaan ontmoeten en daardoor op een informele manier kennis met elkaar delen.

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