Utilizing, co-constructing and sharing knowledge in collaborative teacher learning

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Chapter 6
General discussion and conclusion
1. Introduction

Teacher learning is increasingly organized collaboratively; networks for collaborative teacher learning are being set up by schools, with a focus on questions that are directly relevant to teachers and the school. In this dissertation, such networks are referred to as teacher learning groups (TLGs) and defined as groups of teachers who regularly meet to discuss experiences, literature, or their own research. The underlying idea is that teacher learning in schools is a social process that takes place with others in a specific situation (Stoll et al., 2006). In TLGs, teachers play an active role in collaborative knowledge construction, and the aim is to link teacher learning and school development (e.g. Coburn & Russell, 2008; Hargreaves & O’Connor, 2017).

However, the emergence of TLGs has brought a number of issues to the fore that concern the role of knowledge in teacher learning. Two of these are the limited use of academic knowledge in TLGs and the challenge of sharing knowledge that is co-constructed in TLGs. Moreover, little is known about how knowledge is actually co-constructed in TLGs, or about the role of school leaders in collaborative teacher learning in TLGs. Therefore, the aim of this dissertation was to contribute insights into processes of utilizing, co-constructing, and sharing knowledge in collaborative teacher learning.

Firstly, in order to gain an in-depth understanding of teachers’ limited use of academic knowledge, a review study was conducted into conditions that foster and barriers that hinder teachers’ utilization of academic knowledge. However, teacher learning is not simply a matter of acquiring and utilizing academic knowledge. Professional learning activities have been shown to be most effective if they involve active and collaborative knowledge construction (e.g. Boud & Hager, 2012; Grangeat & Gray, 2008). Consequently, environments for collaborative knowledge construction, such as TLGs, are increasingly being set up. However, little research has been conducted on how co-construction of knowledge in TLGs is approached or on its effects on teaching practices and teachers’ understanding of teaching. Therefore, secondly, TLGs were empirically studied to gain a solid understanding of how the co-construction of knowledge in these TLGs was approached and with what effects. Apart from effects on teacher learning, contributions of collaborative types of teacher learning are expected to innovate initiatives and collective learning in schools. For such contributions to occur, it is crucial that collaboratively constructed knowledge is shared among colleagues and
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The foci of the four studies were: 1) which barriers hindered and which conditions fostered the utilization of academic knowledge by teachers; 2) approaches to knowledge co-construction in TLGs; 3) how co-constructed knowledge from TLGs was shared with other colleagues and with what effects; and 4) which types of school leadership fostered collaborative teacher learning.

To answer the research questions, four studies were conducted in the context of a consortium of two universities, a research center, and six secondary schools in the Netherlands. Study 1 was performed as a literature review. Study 2 and 4 were mixed-method studies. Study 3 was a case study. The participants in studies 2, 3, and 4 were teachers who participated in TLGs, their colleagues, and school leaders from the six schools within the consortium, supplemented with teachers from TLGs outside the consortium in study 2. Data were gathered using pre-structured interviews and semi-structured group interviews with teachers who participated in TLGs, digital questionnaires, semi-structured focus-group interviews with colleague teachers, and in-depth interviews with school leaders.

2. Summary of the main findings and conclusions

2.1 Teachers’ academic knowledge utilization (Study 1, Chapter 2)

The review study presented in Chapter 2 provided insights into teachers’ AKU. AKU was defined as teachers’ use of knowledge generated by researchers in the academic community. Two research questions were formulated: 1) Which
barriers to teachers’ academic knowledge utilization are described in the literature?, and 2) Which conditions are identified that enhance teachers’ AKU? A model was developed and used to analyze the barriers to and conditions for AKU. They were categorized into four levels: 1) the research knowledge level; 2) the individual teacher level; 3) the school organizational level; and 4) the communication level. At the research knowledge level, the main barrier found in the literature was the limited accessibility of research knowledge. At the individual teacher level, teachers’ skills in finding and applying academic knowledge to their own practice, as well as interpreting academic knowledge, and their perceptions of the applicability and relevance of research knowledge were considered to be the main barriers. At the school organizational level, a limited supportive structure and culture were identified as the main barriers to teachers’ AKU. A limited supportive structure was characterized by a lack of facilitation and resources, of which a lack of time for teachers’ AKU was most prominent. A limited supportive culture manifested itself in a lack of recognition by teachers and managers that research-based knowledge was a way to improve teaching skills and increase knowledge. A supportive school leadership was identified as a key facilitator of teachers’ AKU, because school leaders are responsible for the development of the structure and culture of schools. Finally, at the communication level, collaboration between teachers and researchers, preferably in school-university partnerships, was identified as strongly fostering teachers’ AKU.

2.2 Co-construction of knowledge in teacher learning groups (Study 2, Chapter 3)

The study presented in Chapter 3 provided insights into approaches to knowledge co-construction in TLGs, changes that TLG participants perceived in their teaching and understanding of teaching, and supporting and inhibiting conditions for knowledge co-construction in TLGs.

The first research question was: Which approaches to knowledge co-construction are used in TLGs? Three main approaches were identified, on the basis of the primarily knowledge source used: 1) practice-based, in which knowledge co-construction occurred through sharing practical and personal knowledge; 2) research-informed, in which the teachers intentionally used external knowledge sources, such as research performed by others; and 3) research-based, in which knowledge co-construction predominantly occurred
through conducting own research activities or by participating in various forms of research activities, such as research partnerships and action research.

The second research question was: What are the changes teachers perceived in their teaching and their understanding of teaching as a result of their participation in a TLG? Almost all the teachers used the newly co-constructed knowledge in their teaching practice, mainly through the application of newly-designed lessons. Moreover, teachers from research-informed and research-based TLGs in particular appeared to have changed their understanding of their own role in the learning process of students, and of the value of enriching their own knowledge with new educational knowledge and insights from others, such as research knowledge. Therefore, the results of this study suggest that research knowledge can inform practice directly, through changes in teaching (instrumental research use), as well as indirectly, and, in a deeper sense, through changes in understanding of teaching (conceptual research use).

The third research question was: What are the inhibiting and supportive conditions for the co-construction of knowledge in TLGs? We found six clusters of conditions for knowledge co-constructions in TLGs: 1) collaboration in an atmosphere of collegiality and openness; 2) sufficient jointly pre-scheduled time; 3) close connection of the co-constructed knowledge to teaching practice; 4) a structured organization of the TLGs; 5) supportive school leadership; and 6) guidance by an expert.

2.3 Knowledge sharing of research-based teacher learning groups (Study 3, Chapter 4)

The case study described in Chapter 4 provided insights into how knowledge that was co-constructed in three research-based TLGs was shared with other colleagues in their schools and the effect thereof. Following Meijer et al. (2013) and Oolbekkink-Marchand et al. (2013), activities were analyzed that contributed to five types of validity: outcome validity, democratic validity, dialogic validity, catalytic validity, and process validity (Anderson & Herr, 1999). These types of validity were developed as an indication of the quality of practitioner research in the school context. Outcome validity relates to activities that contribute to the co-constructed knowledge to solve a problem, thus leading to positive outcomes for individuals and schools. Democratic validity relates to activities in which multiple perspectives, such as those of
other colleagues and school leaders, are considered by involving all colleagues who have an interest in the co-constructed knowledge. Dialogic validity relates to activities that entail critical dialogue with peers and/or stakeholders, such as other colleagues and school leaders. Catalytic validity relates to activities that lead to a change in teaching and understanding of teaching for all colleagues involved, based on the co-constructed knowledge. Finally, process validity relates to activities that enhance ongoing individual, collaborative, and collective learning, based on the co-constructed knowledge.

The first research question was: Which activities are undertaken to share the co-constructed knowledge from research-based TLGs in schools? Firstly, the activities that enhanced the outcome validity of the co-constructed knowledge were: identifying problems in the school for investigation, including consulting the school leader; aligning activities with topics in school development plans; and working with commissioners. Most of the sharing activities of the TLG participants in this study were aimed at enhancing democratic validity. School leaders and team leaders who were interested in the research process were involved, both formally and informally. Other colleagues, such as teachers, were mostly involved after the research process by informing them through presentations in teams, information in newsletters, or results in an online environment. These activities were aimed at informing other colleagues about outcomes rather than involving them in the research process. Activities aimed at enhancing dialogic validity were seen as the next step in striving for the validity of the outcomes of research-based TLGs; that is, discussing (interim) findings and the results, or their quality in a critical dialogue with stakeholders. As with democratic validity, these activities were mostly focused on school leaders. Moreover, dialogic validity was sought by critically discussing findings with colleagues in teams. The presence of the school leader on such occasions was considered important. However, such activities were organized only occasionally and were not prioritized by the team leaders. A successful activity for attaining dialogic validity was found in one TLG: working with commissioners in combination with providing results and discussing their implications for the commissioners’ own practices, instead of providing them with clear-cut conclusions.

Knowledge-sharing activities contributing to catalytic validity were found in one of the TLGs. These activities involved only the school leader, who was
regularly invited to the TLG meetings, where the research topics and the practical implications for the school were discussed with him proactively. Lastly, activities contributing to process validity were found in two of the TLGs. One of them monitored and evaluated two key topics that were part of the school development plan. The other TLG discussed how the school leader could use the outcomes to strengthen a research culture in the school.

The second research question, “How do these activities inform colleague’s teaching and understanding of teaching?”, specifically concerned catalytic and process validity. In one TLG, pro-actively informing and discussing outcomes with the school leader (catalytic validity) led to a better understanding of the research topics, though not to a changed practice on his part, because the research topics were not yet recognized as relevant to the daily practices of a wider range of colleagues. In two other TLGs, indications of catalytic validity also extended to other colleagues; it appeared that teachers started teaching differently and teaching programs were adjusted. Moreover, teachers came to a better understanding of the topic that the TLG researched, which positively influenced the peer consultation process. Furthermore, indications were found of TLGs affecting ongoing learning (process validity) in two cases. Using the outcomes of the research activities in one TLG, colleagues started discussing their curricula in teams, which is an indication of ongoing learning in these teams. The research process of the other TLG contributed to further development and a better understanding by other colleagues of peer consultation, which was an important topic in the school development plan. However, as with catalytic validity, it remained unclear which specific activities led to process validity.

2.4 The role of the school leader (Study 4, Chapter 5)

The aim of the study in Chapter 5 was to investigate which leadership practices fostered collaborative teacher learning. As an outcome, a typology of school leadership was constructed to provide insights into how school leaders fostered collaborative teacher learning, based on learning-centered leadership theory (Hallinger et al., 2017; Liu et al., 2016) and distributed leadership theory (Bouwmans et al., 2017; Spillane, 2006). Four types of school leaders were distinguished: integrators of teacher learning, facilitators of teacher learning, managers of teacher learning, and managers of daily school practice.
In general, integrators of learning demonstrated a strength in using both learning-centered leadership practices and distributed leadership practices. The combination of these two kinds of leadership practices reflects what Leithwood et al. (2019) claim to be leadership practices of successful school leaders.

Managers of learning showed a combination of strong learning-centered leadership practices and moderately distributed leadership practices. The difference between them and the integrators of learning was in their use of distributed leadership practices. Although managers of learning expressed support for teacher leadership initiatives, those initiatives were directed mainly by formally recognized leaders. As Leithwood et al. (2019) assert, the effectiveness of leaders in this category would benefit from an increase in the use of distributed leadership practices.

The facilitators of learning enacted a combination of moderate learning-centered leadership practices and strong distributed leadership practices. They focused on organizing, structuring, and facilitating teacher learning. Their distributed leadership practices align with what MacBeath (2005) refers to as “formal distribution,” because facilitators of learning tend to delegate influence and responsibility by more or less formalizing teacher leadership tasks. Their learning-centered leadership practices were rated moderate, because their participation in the learning program, and monitoring of what was learned and applied was limited. Drawing on the findings from the study in chapter 5 and the concept of successful school leadership in Leithwood et al. (2019), facilitators of learning would be more successful if they become more active in participating in and monitoring teacher learning. Accompanying teachers in their learning would offer opportunities for modelling participation in continued learning and could positively influence teachers’ appraisal of the school leaders’ personal involvement.

Lastly, managers of daily school practice scored low on both learning-centered leadership practices and distributed leadership practices. Whereas the other three types of school leaders could be characterized as more or less learning-centered and distributing, managers of daily school practice were limited in both areas. Therefore, managers of daily school practice do not seem to be successful in influencing teacher learning and school development.
3. **Theoretical contributions**

3.1 *Three levels of collaborative teacher learning*

This dissertation provides insights into collaboration in utilizing, co-constructing, and sharing knowledge in teacher learning. Collaborative learning was discussed at three levels. At the first level, teachers who participate in TLGs learn collaboratively through the co-construction of knowledge. An open atmosphere of collegiality and openness was found to be the primary condition at this level of collaborative learning. This includes being jointly motivated, being open to the perspectives and ideas of others, being open to new insights, and daring to leave one’s comfort zone. The findings of this dissertation show that collaborative learning in TLGs can be promising for professional teacher learning.

Collaboration with other colleagues – teachers and school leaders who do not participate in a TLG – was discussed as a second level of collaboration. The study presented in Chapter 4 provided insights into how to move from collaborative learning in TLGs to collective learning in the school. Collective learning occurs when co-constructed knowledge from TLGs is shared with other colleagues in a school. It was found that collaboration with school leaders could be characterized mainly as involving them prior to and during the process of knowledge co-construction in the TLGs, whereas collaboration with colleague teachers was done by informing them of and discussing the outcomes of the co-constructed knowledge. The findings suggest that TLGs can more effectively contribute to collective learning in a school by involving colleague teachers and school leaders throughout the process of knowledge co-construction than by organizing knowledge sharing as a subsequent, separate activity. For instance, attention should be paid to activities such as collectively determining topics or problems, involving and informing colleagues throughout the process, and paying attention to activities such as supporting colleague teachers who apply the outcomes in their teaching.

An added value of this dissertation is that it reveals ways in which collaborative teacher learning in TLGs can contribute to the collective learning capacity of a school. After all, the aim of many TLGs is to link teacher learning to school development (e.g. Coburn & Russel, 2008; Hargreaves & O’Connor, 2017). The perspective of the five validities appears to be a fruitful lens through which to examine knowledge-sharing activities in schools, and their impact on teaching and understanding of teaching.
At the third level of collaboration, learning in schools can benefit from collaboration between teachers and external researchers in TLGs, preferably embedded in school-university partnerships. Guidance by external experts, usually educational researchers, appeared to be highly valued as a supportive condition for knowledge co-construction in both research-informed and research-based TLGs. These insights resonate with conclusions from Goodyear et al. (2014), who demonstrated that teachers who were part of a strong professional learning community in which they experienced guidance and support were more apt to change their teaching practices. The school-university partnerships that are discussed in Chapter 2 might offer a context within which collaboration with and guidance from researchers can be established. The findings of this dissertation suggest that research-informed and research-based TLGs that are guided by external experts, and supported and facilitated by school leaders, can be such strong communities in themselves.

For all three of these levels of collaboration, in line with Gurr (2017) and Hallinger, Piyaman, and Viseshiri (2017), the role of the school leader in fostering collaborative teacher learning appeared to be paramount; a facilitating, stimulating, and monitoring role of school leaders can thus be seen as a key condition for utilizing, co-constructing, and sharing knowledge in a culture and structure of professional learning in their schools.

3.2 Three types of knowledge in collaborative teacher learning

In this study, three types of knowledge were distinguished that play a role in collaborative teacher learning, both in teachers’ individual professional development and in the collective learning in a school. They appeared to be related to three approaches to knowledge co-construction.

The first type of knowledge is teachers’ practical and personal knowledge, mainly based on experience. This is the type of knowledge that is primarily used in a practice-based approach to knowledge co-construction in TLGs. It is linked with practice, and can be characterized as detailed, concrete, specific, integrated, and contextually rich (Hiebert et al., 2002). Practice-based TLGs seem to contribute to a culture of professional learning among the teachers in the TLGs, because teachers learn with and from each other by exchanging knowledge, views, ideas, and experiences, and by co-constructing new lessons or teaching approaches based on this. Newly co-constructed
knowledge in these TLGs therefore mainly consists of pedagogical content knowledge in various subjects.

The second type of knowledge is academic educational knowledge. In addition to their practical and personal knowledge, external knowledge sources are intentionally used in TLGs. This type of knowledge is the primary knowledge source in a research-informed approach to knowledge co-construction. It includes: 1) academic literature; 2) conferences, lectures, and workshops; and 3) the input of external experts, such as university researchers. This research-informed approach is consistent with Lillejord and Børte’s (2016) and Wieser’s (2016) suggestion that professional learning requires connecting teacher knowledge to other types of knowledge, such as academic knowledge.

The discussion of barriers to the utilization of academic knowledge in Chapter 2 suggests that teachers make little use of such knowledge sources, for instance due to a lack of recognition by teachers that research-based knowledge is a way to improve teaching skills and increase their knowledge, as well as teachers’ lack of skills in finding, selecting, and interpreting academic knowledge, and their negative perceptions of academic knowledge. Yet, in line with Williams and Coles (2007), this study shows that teachers in research-informed TLGs displayed positive attitudes to academic knowledge. Moreover, teachers reported an increase in academic skills due to their participation in research-informed TLGs. In line with findings from Pareja Roblin, Ormel, McKenney, Voogt and Pieters (2014), this dissertation shows that teachers who participated in research-informed TLGs were able and willing to connect their practical and personal knowledge with knowledge from research. As a result, besides changing their teaching practices through the co-construction of new lessons, teachers from research-informed TLGs also turned out to have an altered understanding of their own role as teachers in the learning process of students; they used research knowledge to reflect on their teaching practices. Comparable to practice-based TLGs, pedagogical content knowledge is the main type of knowledge that is co-constructed in research-informed TLGs.

The third type is knowledge from own research activities, which is the type of knowledge that is central in a research-based approach to knowledge co-construction in TLGs. In the research-based TLGs, the teachers connected their practical and personal knowledge to academic knowledge and to the
findings of their own research activities. The latter comprised mostly research into problems that were relevant for the participating teachers themselves or for their school. It appeared that teachers in research-based TLGs developed professionally: they came to a better understanding of the topics and problems that were investigated, which were cross-curricular, and they shaped and sharpened their vision of education, teaching and learning, and their roles as teachers in the learning process of students. Furthermore, they began to consider their own practices with a more inquiring attitude, and additionally developed research skills. Although teachers from all three types of TLGs reported changes in teaching and their understanding of teaching, in research-informed and research-based TLGs these changes seemed to be more comprehensive, because a wider variety of knowledge sources was consulted.

Although teachers from research-based TLGs rated the applicability and contribution to innovations of their co-constructed knowledge, as well as the deepening of dialogue about teaching and learning in their schools, as relatively high, they also perceived that this knowledge remained fairly invisible in their schools. The reasons mentioned by the teachers from research-based TLGs were that the relevance of the co-constructed knowledge was not always perceived, and that there were inadequate knowledge-sharing activities that could be characterized as in-school knowledge dissemination, instead of collective learning as an ongoing process. The gap between academic research knowledge and educational practice was discussed in Chapter 2. The findings of this study suggest that a similar in-school gap between research and practice may occur. Co-constructed knowledge cannot simply be transferred to others. It requires a learning process for those to whom the knowledge is "transferred". This applies to both academic knowledge and to knowledge that is co-constructed in TLGs. Such a learning process starts with a question or need (relevance). Subsequently, the co-constructed knowledge must be recognized as an answer to that question or need, and sometimes support is needed to integrate that knowledge in practice.

4. Limitations and future studies
Three limitations of the dissertation need to be considered when interpreting the results. The first limitation is that, apart from some additional data in
Chapter 3, the data were collected within the consortium, which consisted of a select group of schools. These schools had chosen to participate in the consortium because they had some experience with or experienced challenges concerning utilizing, co-constructing, and sharing knowledge. To a greater or lesser extent, the processes of utilizing, co-constructing, and sharing knowledge already took place in these schools. Moreover, in all of these six schools, collaborative teacher learning was – among other types of teacher learning – organized in TLGs. Therefore, the results cannot be generalized to other settings and schools that lack such experience. Future studies in a larger variety of schools should demonstrate whether the same conditions apply, and whether the same or similar results are generated.

A second limitation is that the findings in this dissertation are mostly based on self-reported data and therefore on the participants’ perceptions of changes in teaching and understanding of teaching due to the co-construction of knowledge in TLGs (Chapter 3). This also applies to the findings concerning the extent of colleague teachers changing their teaching practices due to the knowledge-sharing activities of the TLG members (Chapter 4). Similarly, the findings in Chapter 5 are based on both school leaders and teachers’ perceptions of leadership practices. In future research, classroom observations, observations of leadership practices, or student evaluations could be used to provide additional insights into whether and how co-constructed knowledge affects teaching, the TLG-teachers and their colleagues’ understanding of teaching, and, as a consequence, student learning.

A third limitation is that the findings of the studies presented in Chapter 3, 4, and 5 concern the situation at the specific time at which the data were collected. It would be interesting to monitor developments over time, such as how collaborative learning in TLGs affects the ongoing learning of colleagues in the school. Future longitudinal studies could provide such insights.

5. Implications for practice and policy
In line with other studies (e.g. Cornelissen et al., 2017; Godfrey, 2016), this dissertation underlines the crucial role of school leaders in leading collaborative learning in schools and their responsibility for creating an organizational culture and structure within the schools in which knowledge is utilized, co-constructed, and shared collaboratively. In order to create a
culture of professional learning, school leaders should concentrate on creating, facilitating, and monitoring TLGs, stimulating teachers to connect their teacher knowledge to knowledge and insights from research, in combination with recognizing and rewarding them as professional learning activities in their schools. Furthermore, school leaders are increasingly expected to be responsible for achieving coherence between educational goals and teacher learning. In education and staff policies, their focus should be on creating a culture in which teachers learn collaboratively how to improve the quality of their teaching and learning processes. When the role of TLGs and the processes of co-construction and sharing of knowledge of TLGs are not embedded in the culture and structure of the school as a learning organization, collective learning through sharing the knowledge of TLGs remains challenging. The typology of school leadership (Chapter 5) provides insight into how school leaders can foster collaborative teacher learning; it can therefore function as a reflection tool that helps school leaders reflect on their own leadership practices.

Secondly, although the role of school leaders is considered paramount, the findings of this study also indicate that the responsibility for collaborative and collective learning should not lie with school leaders alone. This is also the responsibility of teachers. This responsibility includes being actively involved in the process of collective learning by participating in, preferably, research-informed or research-based TLGs in order to link their own knowledge and experiences to what is known from research. Although generally knowledge sharing is viewed as consisting of activities that follow on knowledge co-construction, the findings of the current study suggest an alternative view: knowledge sharing should not be seen as separate from the process of knowledge co-construction, but as intertwined with it. Knowledge sharing ideally includes activities prior to, during, and after the co-construction of knowledge in a TLG. Activities prior to the knowledge co-construction in TLGs are, for instance, used to determine research topics with other colleagues or the school leader. Other colleagues can be involved during the process of co-construction by regularly discussing insights and interim outcomes with colleague teachers and school leaders, involving them in collecting data and the interpretation of results, as well as discussing implications, rather than simply providing clear-cut conclusions. Knowledge-sharing activities that follow the co-construction of knowledge in TLGs should also include more
than just informing colleagues. Supporting colleagues in implementing new teaching approaches based on knowledge that was co-constructed in the TLGs, and monitoring the implementation of these teaching approaches over a long period of time could also be part of these activities.

Thirdly, this dissertation also implies that school-university partnerships could be a way to foster the utilization of academic knowledge, and that this can take a practical form by connecting university researchers to TLGs. The latter seems to facilitate the connection between teachers’ practical and personal knowledge, and researchers’ academic knowledge, and therefore promotes professional learning. Fourthly, this dissertation also demonstrates that time-related conditions are a concern: sufficient time for teachers is needed for researching, finding, translating, and discussing academic knowledge, to meet regularly in constellations aimed at knowledge co-construction, and for the process of knowledge sharing.

Lastly, this dissertation demonstrates the importance of the relevance of the knowledge that is co-constructed in TLGs. The relevance of knowledge for practice was discussed in three of the four studies. Although, in many schools, TLGs are being set up with the aim of focusing on questions that are directly relevant for teachers in the school, this was often perceived differently by other colleagues. Relevance relates to several aspects of the co-constructed knowledge: the relevance of the research question or topic, the relevance of the knowledge sources that are utilized, and the relevance of the knowledge that is the result of the activities in the TLGs. A plea was made to approach knowledge sharing as a process. In each phase of that process, the question of relevance should be addressed by involving and informing teacher colleagues and school leaders.