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Sanne Akkerman & Ton Bruining

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Multilevel Boundary Crossing in a Professional Development School Partnership

Sanne Akkerman
Department of Education
Utrecht University

Ton Bruining
KPC Group

This study aims to understand the recurrent challenges of professional development school (PDS) partnerships experienced by many countries. It does so by conceptualizing PDS partnerships as endeavors to cross institutionally and epistemologically developed boundaries between teacher education, schooling, and academic research. After introducing what we call a *multilevel boundary crossing* approach, we look at the startup years of one academic PDS partnership, scrutinizing the successive learning mechanisms that were evoked at the institutional, interpersonal, and intrapersonal levels. The case study narrative illustrates the multilevel nature of boundary crossing and reveals different learning mechanisms in different phases and at different levels. For example, whereas coordination initially occurred at all levels, transformation occurred in later years mainly at the intrapersonal level. The study sheds specific light on the intrapersonal level by showing the significant and challenging role of various brokers in establishing both horizontal and vertical connections across and within the organizations involved. Despite being important leaders of the partnerships' activities, we observed how brokers prevented others from becoming more involved. We propose that partnerships should carefully consider the sort of learning processes they aspire to and can realistically expect at

Correspondence should be addressed to Sanne Akkerman, Department of Education, Utrecht University, Heidelberglaan 1 3584 CS Utrecht, Postbus 80127, 3508 TC Utrecht, the Netherlands. E-mail: s.f.akkerman@uu.nl

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different levels and moments in time and accordingly consider how they want to position the various actors.

Two decades of pursuing high ambitions and ideals in establishing professional development schools (PDSs) have also revealed the huge challenge involved in their realization. A PDS partnership is a collaborative relationship between one or more colleges and a school and/or district designed to renew school and teacher education programs (Teitel, 1999). Since its introduction in the mid-1980s, the assumption of the PDS partnership has been that it generates an interorganizational structure that can structurally improve education; by integrating formal teacher education, teaching in practice, and collaborative teacher research in schools, both schools and teacher education programs should transform in such a way that they allow for continuous and simultaneous professional development of student teachers, teacher educators, and experienced teachers (Holmes Group, 1990). In turn, such renewal and progress in the teaching profession is meant to better serve students' learning (Neapolitan & Tunks, 2009). It is typically inquiry or research that should serve as the catalyst for the continuous professional development of teachers in PDS organizations (Neapolitan & Tunks, 2009), though the extent to which and the ways in which this inquiry takes place vary across different countries and PDS models.

As argued by Fishman and Davis (2006), the way teachers develop and learn during educational innovation is an important area for learning sciences, particularly in terms of how the innovations are effectively enacted by the teachers. In the end, innovation depends on how teachers interpret and realize the original aims. Moreover, as Opfer and Pedder (2011) showed in their review of research on teacher learning, explaining why teachers change their practices or not requires new research that considers individual teachers' activities in relation to the structure of larger collectives and school institutions, focusing on what processes emerge over time (p. 396). This study answers the call of these authors, with the aim of describing the processes through which a PDS partnership, including its various actors and groups, achieves its goals.

In practice, PDS models have not always realized the ambition to transform schools and teacher education programs. The literature has mainly reported on the difficulty of realizing and sustaining PDS partnerships over time. Scholars have referred to the possible lack of organizational conditions, such as limited time, difficulties in finding resources, and lack of experience among participants in terms of establishing new collaborations (e.g., Darling-Hammond, 2005; Mebane & Galassi, 2003). Besides the need for such conditions, however, scholars have also referred to the more fundamental social and cultural dimension of establishing PDS partnerships. Interorganizational partnerships require the bringing together of different parties and, accordingly, the alignment of different ideas

and perspectives, ways of talking and doing, as well as the establishment of mutual trust and respect (Cary, 2004; Darling-Hammond, 2005; Galassi, White, Vesilind, & Bryan, 2001; LePage, Boudreau, Maier, Robinson, & Cox, 2001; Stein & Coburn, 2008). Similarly, on the basis of reviewing 250 PDS studies, Breault and Breault (2010) concluded that PDS partnerships require organizational change that includes, besides resources, also the establishment of new relationships and a new culture. This social and cultural dimension means, paradoxically, that although PDS partnerships are supposed to provide a context for continuous teacher professional development and learning, their realization simultaneously depends on the professional development and learning of teachers and the collaborating PDS partners.

Specifically, in the context of PDS partnerships, the teachers, educators, and researchers need to learn to collaboratively embed ongoing research on teaching practice in the schools and the teacher education program. The relevance of these partnerships and the learning processes involved are increasingly acknowledged. Reflecting on education and mind in the knowledge age, Bereiter (2005) has argued for the need to create hybrid cultures in schools that integrate research and practice. Following up on this point, Bereiter (2014) recently stressed the need for teachers to develop principled practical knowledge in which practical know-how is integrated with research or principle-based know-why.

To understand what embedding research requires from the partners in a PDS partnership, educational research can gain from drawing more on organizational theory (Breault & Breault, 2010; Callahan & Martin, 2007). Particularly relevant is an emerging strand of organizational literature on boundary crossing (Akkerman & Bakker, 2011). Whereas the PDS literature has only generally mentioned the importance of the social and cultural dimension in new collaboration, a boundary crossing perspective allows a more fine-grained understanding of the required new relationships and cultural perceptions, as it is specifically targeted at analyzing challenges and learning opportunities of situations in which diverse stakeholders (e.g., different disciplines or institutions) need to collaborate.

In the following sections, we elaborate on the notion of boundary crossing and propose a multilevel framework that defines learning mechanisms at the social and cultural dimension of collaboratively embedding research. Moreover, as a next step in boundary crossing research, we propose considering learning mechanisms at different, nested levels of organization, including the institutional, interpersonal, and intrapersonal levels. Departing from this theoretical framework, we present our study of a Dutch academic PDS partnership, analyzing which successive learning mechanisms occurred during the 5 years in which it was established.

BOUNDARY CROSSING

Across many professions, professionals need to collaborate across their primary discipline and organization. This is especially the case for those professions showing a high degree of specialization and institutionalization and in which there is a need to combine different sorts of expertise in order to complete or improve work (Akkerman & Bakker, 2011). Obviously, such collaboration becomes more prominent when interorganizational collaborative structures or partnerships are established for the longer term. Collaboration beyond one's own profession and institution is known to be challenging, as one typically needs to engage in boundary crossing. PDS partnerships can be conceptualized as a large-scale effort of crossing boundaries between school teaching, teacher education, and educational research, each reflecting different types of professionals as well as different institutions.

On the basis of a review of 181 studies on boundary crossing, Akkerman and Bakker (2011, p. 133) defined *boundaries* as sociocultural differences between practices leading to discontinuities in action or interaction. Educational scholars have stressed that boundaries are at play in many working and learning processes (e.g., Engeström, Engeström, & Kärkkäinen, 1995; Wenger, 1998). For example, students may be confronted with conflicting perspectives on subject matter and assignments in school (Christiansen & Rump, 2008; East, 2009; Melles, 2008; Zitter, Kinkhorst, Simons, & Ten Cate, 2009); encounter irreconcilable differences between family, peers, and school (Phelan, Davidson, & Cao, 1991); or encounter different cultural traditions when moving between school and work (Tuomi-Gröhn & Engeström, 2003). Specifically, in dual teacher education programs, student teachers often encounter boundaries between the teacher education program and the schools in which they work (Andersson & Andersson, 2008; Edwards & Mutton, 2007; Finlay, 2008; Gorodetsky & Barak, 2008; Tsui & Law, 2007; Yoon et al., 2006). For example, Alsup (2006) gave an elaborate account of the ways in which student teachers can face different pedagogical values:

Linda: You have to juggle the mentor teacher's expectations, then your supervising teacher, and then of course your students who would be there anyway. And that's been stressful because my mentor teacher's thoughts are so much different from my supervisor's thoughts . . . At first, because I've been in college so long, when I first went in there [school] I thought, this seems so structured and stuff, but she [mentor teacher] knows what doesn't work. She really, I think judging from all her lesson plans, she has really tried everything over the years. And I think sometimes the university supervisors see things from a more philosophical standpoint. (p. 73)

According to Alsup (2006), the quote is illustrative of the way Linda repeatedly experiences tensions between the practical perspective of the school mentor

favoring a consistently applied structure in the classroom and the theoretical perspective of the university supervisors favoring a lot of group work and nontraditional pedagogy.

From her interviews, it becomes clear, moreover, that Linda feels that she should choose one side or the other in order to avoid inconsistency, whereas her ideal is to find a “happy medium” (Alsup, 2006, p. 72). The kind of tension experienced by Linda when moving between her education (the university program) and the workplace (school) appears as a common theme for student teachers, as they typically state how they experience different standards and goals that are expected to be carried forward into the other context.

As already mentioned, professionals can also face boundaries between different practices, particularly when working in or with other groups, disciplines, or institutions (e.g., Broekkamp & Van Hout-Wolters, 2007; Kerosuo, 2008; Paterson, 2007; Star & Griesemer, 1989). Several studies have shown how teachers can face boundaries within their own teams (Venkat & Adler, 2008) and when working with other teacher teams (Cobb, McClain, De Silva Lamberg, & Dean, 2003). Akkerman, Bronkhorst, and Zitter (2013) showed the specific boundaries that can be encountered in projects in which scientific research and educational design and change are combined and argued how each of these practices is historically embedded in different epistemic cultures, adhering to different ways of thinking and doing and different quality criteria.

In response to challenges of facing boundaries, educational scholars have become interested in the ways in which *boundary crossing* can be realized, which Akkerman and Bakker (2011) have defined as (re)establishing continuity in actions and interactions across practices. For Linda and other student teachers, for example, the question is whether they can find a way to combine or integrate the different perspectives they encounter at the university and the schools in which they work, possibly also by talking about their experiences and confronting the different perspectives. It is typically very hard for students in dual programs to realize such continuity across different institutionalized practices by themselves. A PDS partnership can be seen as providing a larger interorganizational structure for exchanging and aligning the perspectives of teachers and teacher educators.

Several learning theories claim that boundaries are potential resources for learning, as they can trigger efforts—of individuals, groups, or larger systems—to cross boundaries. As Wenger (1998) stated in his situated learning theory, the boundary crossing of some community members prevents communities of practice from becoming too stale. In the third generation of cultural historical activity theory on expansive learning (Engeström, 2001; Roth & Lee, 2007), it is stressed how collaboration at the intersection of different activity systems can lead to meaning making and transformation of the involved practices. These theoretical claims about boundary crossing and its learning potential seem to underpin the initial ambitions and positive expectations of PDS partnerships in that the intended

collaboration between teachers, teacher educators, and educational researchers in using research on teaching practices is expected to transform their primary practices of teaching, teacher education, and educational research.

A MULTILEVEL APPROACH TO BOUNDARY CROSSING

As the claim about the learning potential of boundary crossing was initially broad and not yet systematically grounded in empirical work, Akkerman and Bakker (2011) reviewed all of the literature on boundary crossing until 2011 to specify what learning can result from boundary crossing. They identified four learning mechanisms that can take place in situations of boundary crossing (Table 1 provides a summary and examples in the context of a PDS partnership).





First, boundary crossing can lead to a process of mutual *identification*, whereby the intersecting practices are (re)defined in light of one another. In this process, people are concerned with (re)defining the way in which the intersecting practices are different from one another and how they can legitimately coexist. Identification mechanisms are often triggered because previous lines of demarcation become uncertain or destabilized owing to increasing similarities or overlap between practices and sense of threat. Characteristics of identification are efforts at othering (i.e., reasoning in terms of “we vs. you” or “this vs. that”) and legitimating coexistence.

Second, a process of *coordination* of the different practices can take place in the sense that means and procedures are sought, allowing diverse practices to cooperate efficiently in distributed work, even in the absence of consensus (Star, 2010). In these cases, dialogue is established only as far as is necessary to maintain the flow of work. Characteristics of a coordination mechanism are peoples’ attempts to find a communicative connection between actors or translate between them, efforts to organize the activity as smoothly as possible, and attempts to create routines to rely on.

Third, boundary crossing can lead to a *reflection* process, which is about mutually defining the different perspectives that each intersecting practice can bring, and openness to take up others’ perspectives to look at one’s own practice. Accordingly, reflection can be recognized by efforts at perspective making and perspective taking.

Fourth, boundary crossing can lead to a *transformation* process, in the sense that change becomes visible either in terms of changes in the existing practices or in terms of new in-between practices that are created. Characteristic in transformation processes are an initial confrontation with a certain question or problem, a recognition that this concerns a shared problem space, a hybridization of perspectives and sometimes also activities, and a crystallization of new ideas (i.e., in terms of new plans, tools, procedures, or discourse). Transformation typically means

TABLE 1
Multilevel Boundary Crossing Framework

<i>Learning Mechanism</i>	<i>At the Institutional Level (Action and Interaction Between Organizations or Organizational Units)</i>	<i>At the Interpersonal Level (Action and Interaction Between Actors From Different [Institutionalized] Practices)</i>	<i>At the Intrapersonal Level (Participation of a Person in Two or More [Institutionalized] Practices)</i>
Identification	Organizations or units come to (re)define their different and complementary nature.	People come to (re)define their different and complementary roles and tasks.	A person comes to define his or her own simultaneous but distinctive participatory positions.
	Organizations or units seek means or procedures for institutional exchange and cooperation.	People seek shared means or procedures for exchange and cooperative work.	A person seeks means or procedures to distribute or align his or her own participatory positions in multiple practices.
Coordination	Organizations or units come to value and take up another's perspective to look at their own practice.	People come to value and take up another's perspective.	A person comes to look differently at his or her own participatory position because of the other participatory position.
	Units face a shared problem space and start collaborative work or merge institutionally.	People face a shared problem, start collaborative work, and may build group identity.	A person develops a hybridized position in which previously distinctive ways of thinking, doing, communicating, and feeling are integrated.
Reflection			
			
Transformation			
			

some maintenance of the initially unique and different practices and perspectives yet continuous joint work at the intersection for added value.

We conceptualize these four processes as *learning mechanisms* as they explain, in line with Maxwell's (2004a) interpretation of causal explanation, what is evoked by boundary crossing that can locally produce some form of learning. In this framework, learning is understood broadly as developing new ways of doing or new ways of making sense of doing, as triggered by collaboration with or participation across multiple practices. As noted by Akkerman and Bakker (2011), the four learning mechanisms are not to be seen as sequential or hierarchical per se. One can imagine that identification leads to reflection and to transformation processes but also that transformation can lead to coordination processes over the longer term. We also do not consider them hierarchical in the sense that transformation, though often seen as the preferred process by educational and organizational scientists, is not necessarily the ideal in a specific situation; identification can be equally valuable for different stakeholders (see, e.g., Akkerman, Admiraal, & Simons, 2012). We argue that which learning mechanism is to be conceived as most ideal remains a matter of situation, time, and perspective.

In this study, we want to extend the boundary crossing literature by proposing a multilevel approach to boundary crossing. Although boundary crossing has been applied at different units of analysis, including individual people as well as organizations, its multilevel nature has not yet been made explicit. Such a multilevel perspective is an important analytic lens for giving a more nuanced description of how activity unfolds and how changes may or may not come about. As Rogoff, Topping, Baker-Sennet, and Lacasa (2002) have stressed, research on development often either emphasizes the individuals or tends to switch to the impact of partners or cultures without looking at the active contributions of individuals. They proposed and illustrated the value of simultaneously considering personal, interpersonal, and institutional contributions to the way people act and develop.

Very similar to the proposition of Rogoff and colleagues (2002), we suggest that boundary crossing can take place at institutional, interpersonal, and intrapersonal levels, possibly simultaneously. One can speak of boundary crossing at an *institutional level* when actions and interactions are initiated between multiple organizations or organizational units, such as when in a PDS partnership a research group, a teacher education department, and various schools start to search for ways to align their practices at large, meaning that the identities of their organizations or organizational units are reconsidered. For example, by virtue of a PDS partnership, a school can change from a regular school to a PDS school, reflecting a change in organizational identity that is assumed to affect the work practice in the school and to some extent all actors in the school. At an *interpersonal level*, boundary crossing is about actions and interactions between specific groups of people from different practices, such as when researchers, teacher educators, and primary school teachers work together on a certain project and need to establish

some form of collaborative work and relation with one another. One could reason that boundary crossing at an institutional level always requires boundary crossing at an interpersonal level. However, boundary crossing at an interpersonal level does not necessarily reflect boundary crossing at an institutional level. Boundary crossing processes can also take place at an *intrapersonal level*, which is the case when people simultaneously participate in intersecting practices and literally come to embody the boundary. This is the case, for example, when student teachers move between the teachers college and the school during their dual teacher program. As we elaborate in the next section on the intrapersonal level of boundary crossing, people who are in this situation can be referred to as *brokers* and typically have a powerful but challenging multifaceted position that is psychologically quite demanding.

Table 1 gives an overview of the four learning mechanisms identified by Akkerman and Bakker (2011), with descriptions at the institutional, interpersonal, and intrapersonal levels.

We argue that specifying each learning mechanism at each level allows for a more fine-grained understanding of the ways in which PDS partnerships can evoke various learning processes. At the institutional level of PDS partnerships, for example, identification may occur when schools and colleges start to distinguish themselves (e.g., in terms of a theory vs. practice orientation) or when different schools start to distinguish themselves based on the various ways in which they have adopted the PDS concept. Coordination at the institutional level can also become visible, for instance, in concrete tools such as research agendas or procedures that are formulated as a basis for creating similar orientations among the partners in the PDS project. Indications of institutional reflection in the context of PDS would be that schools start to look at their practice from the perspective of the educational research community or from the perspective of educating student teachers within their daily work context or, vice versa, when teacher education programs start to learn more about the daily concerns within schools and when colleges start to learn about the most relevant research themes for schools. Examples of institutional transformation would be the establishment of a new academic master within the program, the creation of research activities for teacher educators, or the involvement of researchers in teacher education classes and in facilitating the networks of PDSs. In all of these cases of transformation, more structural arrangements are created that cross-cut the originally separate organizational activities and responsibilities.

We can also imagine these various learning mechanisms in PDS partnerships at the interpersonal level. For instance, identification processes might occur in groups of researchers who come to define their core motive and expertise as pertaining to scientific research and as distinct from the teacher educators and the school teacher team focusing on applied research, and vice versa. A typical example of coordination at the interpersonal level would be logging school data

for data gathering or exchanging scientific articles and theses between researchers, teachers, and teacher educators to communicate research findings. Reflection would move beyond that in that the respective groups of people would start to take on one another's perspectives, with researchers starting to present their research findings more strongly in terms of the societal relevance of the findings for schools, teacher educators starting to use scientific concepts to describe certain daily issues they encounter, or school teachers coming to conceptualize school practice and question the empirical grounds. Transformation at the interpersonal level in PDS partnerships would mean that new groups are formed with these various types of actors to collaboratively address certain issues, for example, when teachers, educators, and researchers create teams to coach a student teacher during his or her program or to collaboratively write a research application or a journal article.

Less obvious may be the ways in which the various learning mechanisms can also occur at the intrapersonal level. Intrapersonal processes can be expected particularly for those people who participate in more than one of the initially separate practices. Identification then would be an internal process, in which, for example, a teacher educator in the partnership starts to distinguish for himself or herself a teacher educator role and a teacher research role, or when a student teacher defines teaching at school and learning at the teacher education program as two separate activities with distinctive identity positions and developmental aims. Coordination at the intrapersonal level would mean that a person tries to manage his or her different positions by means of tools or procedures, for example, a student teacher keeping an agenda, making a research plan, or making a portfolio to prepare and be able to discuss activities, research, or goals both in school and in the teacher education program. Again, reflection would move beyond this, in the sense that the person starts to create a new perspective on his or her various participatory positions in light of one another, for example, when the student teacher sees possibilities for improving his teaching by looking at it from the scientific notions used in his own thesis project or identifies the critical events in research data because of certain teaching experiences. In such situations, the professional perspectives that come along with the various identity positions start to inform one another. Finally, we can also imagine transformation at the intrapersonal level, which would entail development toward a hybridized position in which the previous ones are no longer distinguishable. This would be the case, for example, when teacher educators develop a natural tendency to pick up emerging questions in teacher education as an agenda for scientific projects in the school or when researchers develop a preference for those scientific issues that relate to everyday concerns in school.

It should be noted that effort in crossing boundaries does not necessarily mean overcoming the sociocultural differences that exist between various practices through homogeneity or sameness but can be aimed at continuity in action

or interaction, such as finding a way to communicate and collaborate. In the case of PDS partnerships, for example, schools, teacher education institutes, and research groups search for a way to align their activities to collaboratively embed research on teaching practices while being likely to remain separate institutions, reflecting different epistemic cultures (Knorr-Cetina, 1999). For example, these different stakeholders may find a satisfying way to collaboratively embed research on teaching practice while (a) the teacher educators' interest remains how this research can help student teachers to become reflective practitioners; (b) the school teachers' interest remains the research findings, on the basis of which their teaching can be validated or improved; and (c) the researchers' interest remains doing research in line with what are timely issues in school practice. One could argue that the relevance of working and learning together also resides within maintaining their distinctive nature.

CONSIDERING BOUNDARY CROSSING AT THE INTRAPERSONAL LEVEL: THE ROLE OF BROKERS

The literature on boundary crossing has revealed the potentially significant role of individual people in (re)establishing continuity, especially in situations in which there is not yet a formalized structure for collaboration between different practices (Akkerman & Bakker, 2011). In those cases, there are often one or a few persons doing the crossing. Terms such as *brokers*, *boundary spanners*, *boundary crossers*, and *boundary workers* are often used to denote them. Whereas the latter two terms are typically used to refer to people's actual efforts and success in crossing boundaries (i.e., establishing continuity in action and interaction) between groups, the terms *broker* and *boundary spanner* typically, especially in social network theory, refer to a structural position in a network, where a person is found to be a more or less unique link between otherwise separate or disparate groups. Nevertheless, the common assumption in social network theory is that, precisely because of being in this structural position and creating what Granovetter (1973) called the "weak ties," brokers or boundary spanners have a powerful position (Aldrich & Herker, 1977; Burt, 2000; Lin, 2001; Tuschman & Scalán, 1981); from this powerful position they can either use information to retain positional authority and their status as a link between two or more groups or use it to join people together for mutual benefit (Obstfeld, 2005).

Looking at brokers in boundary crossing endeavors such as PDS partnerships makes visible how boundary crossing can depend strongly on the way in which but a few people establish linkages. Vice versa, looking at brokers not only in terms of their powerful structural position but also in terms of what they actually *say* and *do* allows one to understand the challenges that brokers may face. The boundary crossing literature has suggested that crossing boundaries is often challenging

because it requires people to “enter onto territory in which we are unfamiliar and, to some significant extent therefore unqualified” (Suchman, 1994, p. 25) or “face the challenge of negotiating and combining ingredients from different contexts to achieve hybrid situations” (Engeström et al., 1995, p. 319). The experiences of people who are positioned and act as brokers can plainly illustrate the discontinuity that can occur and how this is managed at an *intrapersonal level*. In the excerpt from the student teacher (Linda) earlier, one can see how she experiences her double participation, both in the teacher education program and in the school, as “juggling.” Experiences of brokers (in and across school, work, and everyday contexts) as reported in other studies are strikingly similar. In a study by Fisher and Atkinson-Grosjean (2002), for example, managers of commercial institutes are situated between industry and university. They have the task of “building bridges” between both worlds (p. 463) as the means of connecting sides. At the same time, however, they are held accountable in each world and must endure criticism “by academics for being too aligned with industry and by industry for being too academic” (p. 453). Focusing on the identity formation of apprentices in trade vocation, Tanggaard (2007) characterized their position at the boundary as that of marginal strangers “who sort of belong and sort of don’t” (p. 460). There is thus a sense of liminality (Turner, 1969) in the work of brokers. Akkerman and Bakker (2011) summarized the ambiguous position of brokers as being simultaneously both/and, neither/nor; in the case of PDS partnerships, brokers are expected to address and articulate meanings and perspectives of the intersecting practices of daily teaching, of teacher education, and of educational research (both/and). At the same time, the PDS brokers may have an unspecified quality of their own, being the first in their respective institutions to do PDS work and others in the various institutions not necessarily sharing their concerns in this work (neither/nor).

Though brokers run the risk of not being accepted (e.g., Edwards, Lunt, & Stamou, 2010), Jones (2010) found in a historical analysis of boundary crossing architects that people can receive appreciation for their innovative role in changing established professional practices in the longer term. As important actors in innovations, however, they have to be able to take an ambiguous position. What does it take for people to maintain such a position? Landa (2008) noted that brokering generally calls for “personal fortitude” (p. 195). More specifically, it requires people to have dialogues with the actors of different practices but also to self-dialogue between the different perspectives they are able to take on (Akkerman, Admiraal, Simons, & Niessen, 2006; Akkerman & Meijer, 2011). Brokering may be seen as a quality that some people have developed, as emphasized by several scholars when referring to terms such as *boundary crossing leadership style* (Morse, 2010), *boundary crossing competence* (Walker & Nocon, 2007), and *boundary skills* (Fortuin & Bush, 2010).

AIM OF THE STUDY AND RESEARCH QUESTION

This study aims for a better understanding of the challenges and learning opportunities presented by PDS partnerships. Departing from a boundary crossing perspective, we consider the partnership activity as directed toward establishing continuity in actions and interactions across the different organizations and organizational units involved. Following the multilevel boundary crossing framework presented previously, we claim that establishing continuity can be understood as a challenging process (a) that may take place at an institutional, interpersonal, and intrapersonal level, possibly simultaneously; and (b) that may evoke certain learning mechanisms at these various levels, such as formulated in Table 1. From this perspective our central research question is as follows: What challenges are encountered and which successive learning mechanisms are evoked in the startup of a Dutch academic PDS partnership at the institutional, interpersonal, and intrapersonal levels?

With respect to the intrapersonal level, we include both the observed and the self-perceived roles of brokers. Before we discuss the study methods, the next section situates the partnership within the political landscape of The Netherlands.

ACADEMIC PDS PARTNERSHIPS IN THE NETHERLANDS

In accordance with the international movement toward PDS partnerships, the Dutch government has been financing PDSs more visibly since 2000. Initially these partnerships were aimed at creating shared responsibilities between teacher education institutes and schools for educating student teachers, mostly by arranging internships and defining shared educational programs. The participating schools have been referred to as *training schools* (Snoek & Moens, 2011). In 2005, the PDS initiative was extended by financing the creation of *academic PDSs*. An academic PDS is a school that combines a training function with “a component consisting of highly practice-oriented research and innovation” (Ministerie van Onderwijs, Cultuur en Wetenschap, 2005, p. 2). As described by Snoek and Moens (2011), the academic PDS schools have much in common with the concept of the PDS (Darling-Hammond, 2005; Holmes Group, 1990) and the research-engaged school (Handscomb & MacBeath, 2003; Sharp, Eames, Sanders, & Tomlinson, 2005). Academic primary schools are more experienced development schools that explicitly pertain to educational innovation and the professionalization of student teachers and experienced teachers at work, with the conduct of research within schools functioning as the catalyst. These academic schools typically aim for applied research, with the aim of solving problems encountered in educational practice. Though the research intended may also be of a scientific nature, the ultimate aim is to improve educational practice.

Currently there are 22 academic PDS partnerships in The Netherlands, with eight partnerships in primary education. Snoek and Moens (2011, p. 820) described the challenges faced by these partnerships as follows:

When the pilots were first launched, no concrete guidelines were given on how the concept of the academic training school should be put into practice, which meant that the schools were free to flesh this out for themselves. Since research was a new activity for most schools, schools needed to provide answers to such questions as: what is the purpose of the research to be conducted in the school? Who will conduct the research in the school? What is the relationship between training, research, innovation and professional development? What will be the consequences for the culture and structure of the school and for the qualities that teachers require?

The case considered in this study concerns an academic PDS partnership of five primary schools (part of two larger school boards) and one teachers college that participated in the partnership with its teacher education department as well as with its research group. This partnership was focused on building, developing, and sustaining a collective research practice to improve school teaching, teacher education, and research programs at the same time.

METHODS

The study reported in this article focused on the first 5 years of one Dutch academic PDS partnership (2006–2011). The second author was involved in the partnership for the last 2 years, replacing the professor of applied sciences in the teachers college. He was responsible for facilitating the partnership by means of action research during the last 3 years. This study relied on all partnership data gathered during the first 5 years of the partnership. The first author took the lead in the conceptualization and analysis of the partnership. Table 2 gives an overview of the available materials.

During the study, we found that five types of brokers played a central role in establishing continuity in actions and interactions both vertically within organizations and horizontally across organizations: the student teachers, the internal facilitators within the five primary schools, the school directors, the teacher educators involved in the PDS initiative, and the project coordinator of the PDS partnership. We focused on these five types of brokers to grasp boundary crossing at an intrapersonal level and conducted interviews with five of them in order to include their self-perceived role to complement our observations. The interviews were semistructured, probing (a) their professional background, (b) how they perceived the developments (both challenges and achievements) of the partnership, and (c) how they perceived their own role in it. The interviews lasted

TABLE 2
 Overview of Data Collection in the Overall Study of the PDS Partnership From 2006 to 2011

<i>Type of Case Activity/Material</i>	<i>Data Collected</i>	<i>Data Considered in This Study</i>	<i>Details of the Included Data</i>
PDS partnership arrangements	Working papers, covenants, strategic documents, task and role descriptions of different stakeholders in the PDS partnership (described in 2008, 2010)		
Publications about the PDS partnership	Brochures, four evaluation reports (2006, 2008, 2009, 2011)		
Results of research in schools	Conference posters, PowerPoint presentations, research reports		
PDS school evaluations	Case study reports of the five participating primary schools (2009)	Only for school A	24-page report about school A 148-page report of the PDS network by the professor, including 3 pages about school A
Policy meetings	Case study report of the PDS network (2011) Reports of all meetings (2006–2011) Between 2006 and 2009: meetings approximately three times per year + a yearly multilevel evaluation and annual report Between 2009 and 2011: twice a year a policy meeting with board members and coordinators, including video recording meeting A (March 2011); and twice a year an extended policy meeting, including video recording meeting B (May 2011)	All	Video recording of meeting A (83 min) Video recording of meeting B (60 min) 36 e-mails

Broad knowledge community	Five or six meetings per year (2006–2011), approximately 25 meetings, not reported on a structural basis Video recordings of two meetings: meeting C (December 2010) and meeting D (March 2011) E-mail communication between meetings (2009–2011) Five meetings per year per school (2006–2011), approximately 125 meetings in five schools, not reported on a structural basis Video recordings of eight out of 15 meetings, three in each school (2010, 2011), between 28 and 80 min E-mail communication in between meetings (2009–2011) Narratives collected by brokers (2010) Biographical interviews with brokers (2011)	All	Video of meeting C (37 min), Video of meeting D (46 min), including 10 × 2-min individual reflections 130 e-mails
Small knowledge communities (within schools)		Videotaped meetings and e-mails for school A	Video of meeting E (28 min) Video of meeting F (37 min) 40 e-mails
Brokers		All	5 × 3 = 15 narratives Written reports of five interviews of 60 min

Note. PDS = professional development school.

to 90 min, were recorded on tape, and were transcribed verbatim. Transcripts of the interviews were presented to the interviewees for correction and validation. The few corrections that needed to be made were related to correction of the grammar of certain sentences and changes regarding some of the facts about the partnership.

Analysis

For the analysis we used a case study approach (Yin, 2013), an approach aimed at a holistic study of a phenomenon within its real-life context. We followed five analytic steps to answer the research question. First, we created a thick description of the PDS partnership in terms of its organizational structure. A thick description is an approach used to give an elaborate account of the local context that is the object of study (Geertz, 1994). Our thick description was aimed at identifying (a) activity aimed at establishing new connections within and across organizations and organizational units, (b) new interpersonal relations between individuals, and (c) new positions of actors that were established in light of the partnership. This analytic step resulted in an overview figure with three new types of groups crossing the organizations at different hierarchical positions (see Figure 1). These types of groups were referred to in the project respectively as the *policy meetings*, the *broad knowledge community* (BKC), and the *small knowledge community* (SKC).

The second step in the analysis consisted of open coding of themes in the data (Strauss & Corbin, 1998) in order to identify challenges in establishing and sustaining the partnership. Open coding of data is a technique in which one reads through the data and by means of coding summarizes what one sees happening. This second step led to the identification of one main and recurrent challenge (i.e., involvement).

The third step in the analysis was aimed at creating a thick description (Geertz, 1994), but now targeted at a chronological reconstruction of the activity of the partnership, focusing on what was done and discussed in and outside the three groups throughout the 5 years, including specific transcriptions of verbal (and partly nonverbal) behavior during (a) interactions (in meetings, e-mail communication, and documents) referring to the main concern of involvement; and (b) linkages between the three groups, that is, the way in which the interactions within one group were brought into or became the object of discussion in another group, mainly revealing the prominent role of brokers.

The fourth step consisted of what Maxwell (2004a) described as chronological narrative and connective analysis. This type of analysis aims to produce a chronological narrative that is simultaneously structured for “processual explanation” (Maxwell, 2004b, p. 256), connecting events and processes and thereby making causal inferences in the local context. Specifically in our case study, we interpreted

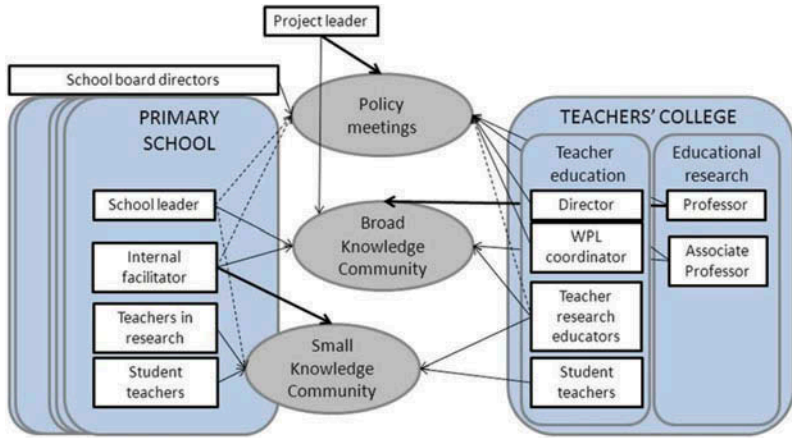


FIGURE 1 Visualization of partnership organizations, boundary crossing activity, and types of actors. Blue boxes indicate the organizations involved in the academic professional development school partnership. Gray ovals indicate the interorganizational project groups, with the two upper ones crossing all five schools and the teachers college and the lower group crossing the teachers college and each of the separate schools. White boxes indicate the types of actors participating in integrative activity. The arrows indicate the participation of the actors in the groups, with thick arrows indicating a lead position and dotted lines indicating partial participation in the group. WPL = workplace learning.

the thick description resulting from Step 3 in terms of the four different learning mechanisms at different levels, using Table 1 as a sensitizing framework. For example, when looking at the chronological description of the PDS activity of the three project groups in the first 2 years, we clearly recognized a process of coordination. Coordination was seen respectively at the institutional level, interpersonal level, and intrapersonal level. Only after 2 years, the PDS activity changed in what we interpreted as a process of identification at the interpersonal and intrapersonal levels. In this way, we labelled the PDS activity over time in terms of successive learning mechanisms at one or more levels, leading to a final structured narrative that is included in the Results section.

The fifth step of analysis focused on the interviews that were conducted with five people who, as became visible in Step 1, were identified as brokers. By means of open and selective coding of themes (Strauss & Corbin, 1998), we identified four themes that were consistent across the interviews: Two themes derived from open coding, related to the challenges that the brokers encountered (involvement of teachers and own central position); and two themes derived from selective coding, related to two learning mechanisms experienced by the brokers (reflection and transformation). These four themes were consistent with the challenge and

learning mechanisms that were observed in the meetings (following from Steps 2, 3, and 4 in our analysis). The four themes derived from the interview are described in the final section of the Results section. Steps 1 to 3 in the analysis were initially conducted by the first author and then member-checked by the second author. The member-check led at some points to more detailed information about the positions of specific actors or about the chronology of actions and interactions. Steps 4 and 5 were conducted in collaboration, and results were discussed until agreement was reached.

RESULTS

Here we first give an overview of the new project groups that were established for the PDS partnership across and within organizations, revealing a characterization of boundary crossing and brokers at hierarchical positions in the partnership. To indicate what the boundary crossing entailed, the next sections zoom in on actions and interactions within and between the project groups, specifically showing four phases of successive learning mechanisms over time.

Three Project Groups

A thick description of the partnership revealed how the PDS partnership established three new types of groups between and within the involved organizations during the first 2 years. [Figure 1](#) gives an overview of how these groups brought together the teachers college and the schools through different constellations of actors.

To begin with, this visualization shows structural efforts at boundary crossing in the form of three project groups involving actors with different hierarchical positions in the schools and the teachers college. Given the hierarchical positions of the groups, one would expect these project groups to have different aims in terms of realizing the PDS concept. First, the policy meetings were created as a grouping with the highest hierarchical position, crossing the boards of all of the involved organizations and aimed at the longer term institutional policy of the intended collaboration as well as the financial management of the academic PDS partnership. The group was meeting about four times a year, and its participants comprised the project leader (later introduced as Vivian), chairing the group and preparing the meetings; school board members, representing two school boards of which the five primary schools were a part; the director and workplace learning coordinator from the teacher education department; and the professor and associate professor from the teachers college research group. This group was held accountable by the Ministry of Education for establishing the stipulated PDS

partnership. In the fourth and fifth years of the project, the group was extended twice a year, with all actors of the BKC participating (see dotted lines in Figure 1).

The second group was referred to as the *BKC*, a grouping at the upper organizational level of the schools and teachers college, initially aimed at developing and implementing PDS policy to embed educational research and teacher education within the schools. The group was led by the professor of the teachers college and included the school directors and internal facilitators of the schools, the project leader, the associate professor, and the three teacher research educators.

The third type of group was what they named the *SKC*, within each of the five schools, created with the aim of planning, discussing, and sharing the educational research conducted within the schools by both student teachers and school teachers, with no specific or overall research topics formally defined up front. As this activity was directly aimed at integrating educational research, teacher education, and schooling, one could argue that the SKCs in the five schools were key in the PDS concept. The group was typically led by the internal facilitator of the school, and participants included the teacher research educator associated with the specific school, the student teachers, and the school teachers involved in the research within the respective school. In this study we focus on school A to give a more detailed account of the SKC.

Two points can be made up front regarding different levels of boundary crossing. First of all, it is worthwhile mentioning that the groups potentially reflected *all three levels of boundary crossing* as described in Table 1: The aims of the groups were to establish, at an institutional level, continuity across the involved organizations and organizational units; the groups themselves reflected new configurations of people requiring the establishment of interpersonal relations among them; and, individually, the group members within all three types of groups may have been affected at an intrapersonal level or caused intrapersonal mechanisms for others in the organizations.

The second point regarding the structure of the project activity (as visualized in Figure 1) concerns the many types of actors involved, with some more central in the whole initiative than others. For one, some actors prepared and led one of the PDS project groups (i.e., the project leader, the professor, and the internal facilitators). In addition, several actors participated in not one but two groups, thereby potentially linking the different types of activity vertically or hierarchically (i.e., the project leader, the professor from the college, the internal facilitators, and the teacher research educators). Finally, the student teacher was a notable actor, being the only one who simultaneously participated in both the teachers college (within the teacher education program) and the school (working as a teacher and conducting research). The analysis of actions and interactions in the three types of groups revealed that these actors could indeed be considered the brokers in this project, as they established both horizontal and vertical connections, as also becomes evident in the presented results.

In the remainder of this section, we describe the project activity in terms of the actions and interactions within and between the policy meetings, the BKC, and the SKC (for the SKC focusing on one school, referred to as *school A*). Throughout the results the brokers are identified by pseudonyms, and the interviews conducted with them are summarized in the last section. Following our thick description of the chronology of activity, and more specifically the challenge and *successive* learning mechanisms that we identified by means of our narrative and connective analysis, the project activity is summarized in terms of four phases, subsequently showing (a) coordination at the institutional, interpersonal, and intrapersonal levels; (b) identification at the interpersonal level; (c) reflection at the interpersonal and intrapersonal levels; and (d) transformation at the interpersonal and intrapersonal levels.

Phase 1: Coordination

The Policy Meetings Starting Up the Project

The policy meetings represented the first steps toward establishing the PDS project. The members first discussed and decided on the infrastructure of the partnership. This included converting intentions into working agreements regarding the designation of academic primary schools, the deployment of staff of the primary schools and the teachers college in the education and research programs, the education and training of teachers and teacher educators for their work in the academic primary schools, the programmatic planning of a line of research in the curriculum, and the attraction and selection of students. As regards the further establishment of the partnership itself, one BKC was created as well as an SKC in every school, along with a rough sketch of which actors had to be involved in these project groups. Given this focus on designing the overall infrastructure across and within the organizations to embed the research in the schools and teacher education program, the orientation of the policy meetings can be interpreted as efforts at *coordination at an institutional level* (see [Table 1](#)).

The BKC Implementing and Working Out Policy for Doing Research

In the first 2 years, the BKC mostly functioned as an extension of the policy meetings. The group decided to focus on what they in the third year, retrospectively formulated as (a) creating an infrastructure within the network; (b) developing a curriculum for the academic teacher education program, including a plan for student teachers to do research and to be educated as teachers within the schools by means of local supervision; and (c) determining a method for doing research systematically in subsequent steps to be used in research activities by all schools (i.e., according to a model referred to as “the collective practice-based research model”). Similar to the policy meetings, this BKC activity initially reflected a

new process of *coordination*. Yet as the BKC focused more directly on the positions, roles, and relations between the actors within and across the organizations, including within their own group, this reflected a focus of coordination at the *interpersonal level* (see also Table 1).

The SKC Starting With Research Activity

In this study we focus on school A to give a more detailed account of the SKC. School A was slightly different from the other schools in that the school was established in the second project year and immediately joined the partnership, participating as an academic primary school from the start. From the beginning all school teachers participated in the group meetings of the SKC. Though this may imply their full involvement in the PDS initiative, the involvement of teachers emerged as a problematic issue similar to in the other schools, as evidenced later (Phase 2). Initially the school started as intended by the BKC and the policy members, starting up research activity with the involved actors; in this phase, they did so without questioning the aims or the procedure. The SKC of school A started within the first official school year (i.e., the third year of the partnership), with mathematics learning trajectories as the research topic. This topic was chosen as it was mentioned in the school's policy as one of the basic skills to be learned. During this year, two student teachers conducted the research and discussed the plans and ongoing results in the meetings. By taking this approach, the student teachers became the primary researchers.

Coordination of Research Activity by the Brokers

Looking across the groups, we can also recognize the first phase of coordination at an *intrapersonal level*. The three actors leading the three groups (i.e., the project leader Vivian, the professor, and the internal facilitators within each of the schools) focused on organizing the meetings of the groups they were leading. This concerned preparing the agenda for the meetings and writing reports but also making sure that relevant information such as research plans and reports was shared among the members as well as between the groups.

Phase 2: Identification

The SKC: Research Not Useful, According to Teachers

In the evaluation meeting at the end of the school year the group concluded that the research question should be "manageable" and "concrete enough to be useful." In the next school year (the fourth year of the project), the SKC's first meeting revisited this evaluation, also to set the agenda for the second year of research. In a forward-thinking e-mail, the teacher research educator Ruby suggested to the

school director Adèle (also the internal facilitator in the first year of research) an agenda that allowed for increasing ownership:

I think it is a good idea to mainly start very openly, asking everyone to “think along/contribute”, because teachers in research and student teachers have to become (part) owners of the research. It is also important to search with the team for a way of working in the SKC that everyone considers relevant/useful (see also points mentioned in the evaluation last school year).

In the first part of this meeting, the two student teachers reported that they had learned quite a lot. In contrast, three of the school teachers who had signed up for research activities noted that they had not learned much about the research, with one person indicating that she also did not have time to do so. Looking forward, another school teacher said to the others,

It has to “live”—and it didn’t do that last year . . . so research that really answers something we want to know and what is doable within 1 year, something that is directly useful the next day. Then I think one can complement another [student teachers and teachers] much more.

In line with this, various school teachers emphasized the importance of keeping the studies small and close to daily teaching practice.

What started with an evaluation of the previous year ended up in a discussion and more precise formulation of what was missing in the current group according to the school teachers. The various critical comments of the teachers denoted a process of *identification at an interpersonal level*, mainly in the sense of identifying a discontinuity that they had experienced between the research activity within the SKC and the daily practice of teaching in school. As becomes clear in the next section discussing Phase 3, the process of identification appeared later at an intrapersonal level and, as discussion in the BKC meetings suggested, turned out to occur across all five schools.

Phase 3: Reflection

An Ongoing Concern in the SKC: The Involvement of School Teachers in Research

After the first identification of the discontinuity between the first research activity in the school and daily teaching activity, the SKC started to show explicit efforts at choosing research topics that were more relevant for teachers and teaching. The effort could be seen already immediately after the identification of the discontinuity in the first meeting of the second school year. When one of the school teachers involved in the research, Zita, said that she had been motivated

by reading about multiple intelligences, the question came up whether this was a topic that fit the vision of the school. Though it had not been a concept explicitly mentioned in policy documents, several participants agreed on its connection to the schools' ideas about recognizing pupil diversity. The school director Adèle reiterated the importance of focusing the research on topics that allowed the whole school to develop, and she saw multiple intelligences as relevant from that perspective. The meeting ended with the agreement that multiple intelligences would be the research topic, and several questions were formulated about its compatibility with schools' ideas. Everyone was asked to think about these questions.

Between this meeting and the next one Zita was formally appointed as internal facilitator, taking over this role from Adèle. It allowed Adèle to withdraw from the SKC and focus on the BKC and the policy meetings. As shown in communication in the BKC, assigning a separate internal facilitator was both a pragmatic decision as well as an attempt by Adèle to create more ownership of the research by school teachers. This seemed to have the desired effect, at least for Zita, who started to talk about "her" and "their" (i.e., including student teachers) research on multiple intelligences during the rest of the second school year.

Despite the more involved role of Zita as internal facilitator, we observed that in the third school year the SKC still struggled to involve other school teachers in the research activities. As in the second year, the relevance of schoolwide development was an important criterion in choosing research topics. Two research topics were chosen: first reading and the 12 core values of school A. Both topics were part of the schools' policy. Six meetings were organized this year, three of which were observed for this study. The meetings were all prepared by the internal facilitator and the student teachers. Zita also had very frequent contact with Ruby (the teacher research educator) to discuss the SKC and the agenda for the next meeting, often before working on it in more detail with the student teachers. Zita distributed the final agenda to the SKC.

The meetings in the third year shed further light on the different roles and a recurring concern. Zita chaired the meetings, but whenever an update on research activities was needed or specific content was presented and discussed, Zita gave the floor to the student teachers. In the preparatory documents for the meetings, the student teachers' presentations often had two aims: informing the others and asking for feedback. In line with the latter, the two student teachers frequently asked the others to give feedback on what they presented, and they appeared to be open to receiving it. The available agendas and reports of the meetings indicated that student teachers became more prominent in preparing and chairing particular parts of the meeting throughout the year. Though this could be expected as a natural consequence of the research becoming more elaborate and central on the agenda during the year, we learned from observations of the BKC (described in the next section) that Zita deliberately gave the student teachers a more central position.

In contrast to Zita's intention, the three observed meetings (i.e., the second, fifth, and sixth) showed that what started as an activity led by the student teachers often ended up as discussions between the school teachers. In the second meeting, for example, one of the student teachers gave an update of the research plan on first reading (Research Topic 1) and asked school teachers for feedback. What started as a response to the student teacher quickly resulted in a discussion about what the school team wanted when it came to the topic of first reading and whether the research question as formulated by the student teacher was at the core of what needed to be studied. Lack of consensus complicated matters. During this discussion, the student teachers did not speak, even though their research was under discussion. It was Zita who stopped the discussion, concluding it by summarizing what had been said and formulating some main points for the student teachers to take into account. In what seemed an attempt to account for but also temper the discussion, Zita said, "We are all owners [of the research], therefore the [space for] feedback."

The division of roles was recognized in the sixth meeting, despite the more noticeable position of the student teachers in preparing the meeting and chairing the activities. At the start of the meeting, the SKC members were asked by Leonore (a student teacher) to evaluate the SKC using a storyline method to formulate positive and critical comments for successive meetings and research during the year. In terms of learning mechanisms (see Table 1) this assignment evoked a process of *reflection*, as becomes visible in what followed. Before starting, Leonore roughly sketched last year's activity, with Zita adding information as well. School teachers appreciated her reviving the "collective memory" of the group, saying "it is difficult to recall what happened" subsequently. It is noteworthy that neither the student teachers nor the internal facilitator participated in this evaluation assignment.

After everyone individually wrote down evaluative comments on paper, Leonore and Zita asked them to share some thoughts with the group. In response, several people reasoned that the meetings should be designed more *to work* on the ongoing research (i.e., *werk-bijeenkomsten* in Dutch) rather than as meetings (i.e., *vergaderingen* in Dutch) "in which the internal facilitator and student teachers *inform* the others and talk about it with them." Of the six meetings, the third meeting was preferred for this reason, as it had been a meeting in which they collaboratively discussed and worked on the research plan. After this and some other critical comments, involvement was mentioned explicitly and discussed as a concern. The following excerpt shows how this discussion started:

Teacher 1: [Looking at Leonore, the student teacher] I have not been very involved in the research. I could not explain to others what your research is about. . . . or what the conclusions were. So I think

that my involvement has not been that much. I do know what the research of Jessica [student teacher in previous year] was about, and I have seen it once.

Teacher 2: Yes, but that is also related to your interests.

Teacher 1: No, no, it is more the fact that I have not clearly defined for myself why I am here [in the SKC meetings] and often just sit here and listen, saying something when I hear something I do not agree with or agree with. But not really like feeling involved in the sense of . . . hey, let's just go and help with the research. I don't have that. I have more like . . . Oh, I have to go there again, I have so many other things to do . . .

Adèle: Yes, I would like to respond to that. . . . For next year, it [research] will be explicitly mentioned in your "yearly task description," and then we can also hold you accountable as teacher researcher, ask you to really contribute, read a piece, join the students in doing research, etc.

Teacher 1: But also one can choose, because I do think that is a difference, that you you, that you have to be here. I know that of course we are an academic primary school, because that I don't question, but that you really can choose whether you want to contribute in such a study.

Adèle: Yes, I think you touch upon good issues, because you can say like, "Yes, I do want the hours, the extra hours indeed, so that I can participate in the research," or "No, I do not want so," but then you, with the knowledge community meetings [SKC], because that is obligatory, to speak in such terms for a moment, be present and then it has to be about schoolwide issues [marks a broad space with her hands].

Teacher 1: Yes, I get that, but in that case you will join in a different way.

Adèle: Yes, in that case you will be informed.

Ruby: Yes, but what is the idea if you choose the latter? Because the risk is that . . . [looking and making a gesture to Teacher 1].

Teacher 1: Yes, then it will be the same as last year, thus the SKC needs to be different then, have a different content.

Teacher 2: What kind of content then?

Teacher 1: [After a short discussion responds] . . .something that is immediately very useful.

This excerpt clearly shows the difference in perspective of the school leader and of the teacher who spoke. Whereas the school leader expresses a concern about task descriptions, time for research, obligations to contribute, and research topics

that address schoolwide issues, the teacher expresses a concern about research and the meetings not being useful for daily teaching. The latter can be recognized as the same concern described in Phase 2. Yet, in addition, the teacher connects the earlier concern about lack of relevancy of the research to the concern that she has not been involved enough in the research, thereby formulating the difference between research and teaching as an *identification at the intrapersonal level*. It is notable that during this discussion, the student teachers moved completely to the background; group members did not look at them, and the student teachers frequently looked down or away from the person talking as if it did not concern them or their research any more, even though the critical point made by the teacher of not being involved in their research might well have been considered a criticism of its lack of relevance.

The way this final meeting took place suggests a new phase of challenges and learning mechanisms in the project. On the one hand, we can see how the evaluation assignment initiated a *reflection process at the interpersonal level* (i.e., Table 1). The school teachers were explicitly invited to share their perspective by formulating both positive and critical comments. This also created space for them to react on the way the group worked and the various roles within the group and to connect the concern about the lack of relevancy of the research to involvement in the research.

On the other hand, the way this evaluation itself took place represented and maintained the very concern being expressed. The student teacher and Zita prepared the meeting and took the lead in the evaluation assignment, not participating in it themselves. Moreover, in terms of the way in which communication took place, the space given to the school teachers remained limited. Zita often responded to the various comments during the evaluation by saying, "Okay, we will take this with us" or "Yes, we will see how this can come back next year." This suggests that Zita accepted points for action for which she and the student teachers, rather than the whole group, were responsible.

Looking at the concerns at stake in terms of boundary crossing, one can see how the SKC was faced with the challenge of crossing two boundaries simultaneously. Zita's efforts in the SKC to give the student teachers a more central position seemed to reflect an attempt to *establish continuity between research and teacher education*. In the final meeting, however, school teachers were given the floor to present their concerns, which can be seen as efforts to *(re)establish continuity between research and schooling*. Yet this turned out to be at the expense of the position of the student teachers in the meeting, as they withdrew from the discussion. This could be an explanation for the ongoing discussion and lack of solution.

SKC Activity and Concern Discussed in the BKC: How to Get Everyone Involved?

In response and parallel to the identification and reflection processes within the SKCs, the BKC adopted an ongoing *reflection process at an interpersonal level* (see Table 1), questioning how the PDS-related activity was and should be shaped and embedded in the five schools. In the first meeting, the group signaled that schools “faced the problem that the ownership of the practice-based research lies with a few actors.” In discussing and reflecting on the concerns, questions came up, such as, “Should all teachers in academic primary schools be researchers?” “How can research be sustained in the academic primary school?” and personal questions for the participants such as “What role do I have in this sustainability?”

The questions came to be central in many of the BKC discussions and activities that followed in the two subsequent years. After the problem was flagged in the meeting, the BKC decided first to exchange ideas about what could be expected from teachers in terms of professional development in an academic primary school and then to work toward a more concrete plan for improvement. As suggested by the new professor chairing the BKC, everyone wrote reflections about this to the group also in relation to scientific literature on professional identity and the development of teachers.

Adèle, the school leader from school A, sent a text to the group in which she brought up three issues in relation to ownership of research activities. She noted that all teachers in her school were expected to take part in the SKC in their first year of research and also expressed their interest in doing so. At the same time, she noted that teachers found it difficult to find enough time and that she intended to give more time for research activities. Moreover, in light of the literature, she considered the SKC *as community* a fruitful mechanism for stimulating professional development in collaboration, not one that emerged by itself but one for which opportunities needed to be created. She took this as a personal challenge:

My personal challenge this year is to really achieve knowledge creation, team-wide. With the available means and time. To, in that way, realize a good and broadly accepted “product” which can be embedded in school A and is not going to be put on the backburner.

With respect to her own role she also wrote about a significant decision no longer to combine the task of school leader and internal facilitator but to focus on the former:

Finally, for this part, I am still in search of my role. . . . the combination of school leader/internal facilitator means that I cannot be an optimal part of it. Besides this, I experienced last year as heavy, besides starting a school with an innovative concept . . . , being part of the BKC as well as being responsible for preparing the SKC.

To realize the ownership better, I would like to experiment this year with two representatives in the BKC: an internal facilitator and a school leader. I will participate as the latter, but will ask a teacher to be the internal facilitator.

The various texts of the school leaders and internal facilitators resulted in a research question for the BKC to investigate on how to sustain a research culture among the various type of actors within the PDS partnership. All texts sent to the BKC for discussion pointed to the limited time that teachers have and the need for research to be interesting to teachers and therefore related to a concrete and recognizable topic. It is noteworthy that all BKC participants, similar to Adèle, questioned their own competence and the need for further professional development in leadership, particularly in terms of stimulating ownership of the PDS concept within their schools. In terms of our analytic framework (see Table 1) this shows how reflection processes at the interpersonal level also evoked *reflection at an intrapersonal level*; here, research led to a new intrapersonal perspective with which the BKC participants started to reconsider their leadership competence within the schools.

The group decided to continue with different initiatives for PDS realization, which included, besides continuing the program for research within the schools (to be conducted by student teachers and teachers), the BKC starting to conduct research on the PDS partnership to discuss what was going on. As a first step in researching the partnership, the school leader and internal facilitator of every school started systematic reflection on what had happened in their school so far, deciding in subsequent BKC meetings to write one another about (a) what took place in each school, (b) what worked well and what did not, (c) what the SKCs in the schools considered to be the role of the different actors mostly related to the PDS concept, and (d) (counter)narratives with respect to these different actors reflecting their attitude toward the PDS concept.

A document initially written by Zita and Adèle to prepare for one of the BKC meetings summarized the activities in school A and again referred explicitly to the involvement of teachers as an important issue: "The aim should be that everyone owns the studies that are conducted." They wrote that "this is an important task of the internal facilitator." At the same time, their text referred to the SKC mostly as "meetings" and referred to the need to make sure the teachers were "informed about the research" that took place. As we know from a previous section, one of the later evaluations within the SKC revealed that "informing" teachers was considered too limited for involving them.

Zita and Adèle also sent a summary of what the SKC in school A concluded in defining the roles of the various actors. Here one can see how the school leader (Adèle) was expected to create several structural conditions for the research activities, among which was ensuring time and preventing overload. In contrast, the

internal facilitator (Zita) was expected to focus on supervising the research activities, both content- and process-wise, as well as to “keep everyone involved.” This suggests that this could not be assumed. School teachers in turn were expected “to provide feedback,” to “act as critical friends,” and also “to be and to stay involved.” Among the different narratives collected in school for the BKC, the narrative written by Adèle was most striking in that she wrote two contrasting teacher narratives. One narrative was about “what is characteristic of the teacher as researcher,” reasoning why “an academic attitude and good research skills are indispensable for a teacher” for lifelong learning and continuously striving for educational improvement. The other narrative, delineating “what shows that there is still a need for further stimulation of the PDS concept,” comprised a fictional account from a teacher describing a regular hectic working day that raised the question

Where should I find the space to think about research? . . . if tomorrow the kids are waiting again, expecting me to give a good lesson, having lesson materials ready, and assuring a parent that everything will be okay with pupil X.

These narratives indicated Adèle’s negative experiences and expectations about school teachers’ involvement in doing research.

In one of the meetings, Zita described a related problem regarding the school teachers’ role, namely, that they were professionals with their own concerns, which were not primarily related to PDS. Specifically, Zita reported about difficulties she faced in a meeting of the SKC and how student teachers’ central role in presenting the research was “completely taken over by the school teachers when they started discussing with each other” and that they “gave assignments to the student teachers rather than taking a collaborative stance” toward the student teachers. Ruby added that one could see how “the student teachers became more silent during the meeting.” Zita noted several reasons for what happened, such as that everyone had their own opinion to express. Nevertheless, she indicated that she wanted to increase her leadership, asking the others for advice: “And I would like to receive any tips and tricks for this, as it is a complicated role that I have within the SKC.” The BKC continued discussing in small groups the complex role of the internal facilitators in the schools, showing a collective attempt at *reflection at the intrapersonal level*.

Phase 4: Transformation

The BKC Reformulating the Aim of the Project Regarding Research

One BKC meeting later in the fifth year of the project seemed to represent a new phase in terms of learning mechanisms. In this meeting the group also discussed

the concerns that everyone had, yet this time more generally questioning how to sustain the PDS concept within the schools in the future. This questioning appeared timely, as this year was the last formally guaranteed for the partnership; future plans for the PDS partnership of the school board directors and financial support were still unconfirmed. In 2-min individual reflections during the meeting, the group members (all brokers) seemed to reformulate the main idea or object of the project, indicating a new *process of transformation at an interpersonal level*. Consistently, and in contrast to their initial focus on coordination, the group members concluded that the PDS concept was and should be more than an idea to be maintained by “several people”—and more than an activity in terms of “doing research” only. Participants stated, for example, that

- it is not only about school teachers having time for engaging in research activities but also about them prioritizing research (Adèle);
- it is not about taking all of the technical steps defined by the collective practice-based research model but about developing an academic attitude (Ruby);
- it is not about someone or everyone doing research all of the time but about shifting roles in terms of who engages in particular research projects for a certain period of time (school leader);
- it is about continuously working on school development through many different initiatives, of which research is an integral part (school leader);
- it is about finding a way to inform and involve others, such as parents, in what way the school is a PDS school, and therefore different from regular ones (internal facilitator).

Another teacher research educator pointed to the difficulty of making PDS a shared concept within the different schools and also of embedding it within the teacher education department, where the PDS concept related to only five of the many schools to which student teachers went. Sustaining it, she argued, required explicitly deciding at the policy level to make it part of the broader structural vision of the school boards and the teacher education department. Vivian concluded how she wanted “to question much, much, much more, as school board directors now have to make decisions” regarding how they intended to sustain the PDS partnership. She referred to the next policy meeting, during which she aimed to do that.

The explication of challenges and the reformulation of the PDS as being a concept throughout the organizations rather than being a matter of some people conducting research formed the basis for a symposium that the group started to prepare in the fifth year for a national conference for teacher educators. They decided to present and discuss with the audience of the conference not only their achievements but also the recurrent challenges in establishing and sustaining a

professional research *culture*. In the resulting workshop one of the main challenges formulated and recognized by the audience was “involvement of teachers in research.”

Discussing SKC and BKC Concerns in Policy Meetings

Because of the transformation process taking place within the BKC in the fifth year, the policy meetings became an important arena for further actions and decisions. In the years before, the policy meetings had functioned as a grouping mainly on the back of the partnership, following the ongoing activity within and across the schools from a distance. This was possible because the project leader Vivian, the professor, and the associate professor were the main actors who summarized for the other participants what went on in the BKC (in which these actors themselves participated) and in the SKCs of the schools (discussed in the BKC). This information did not lead to significant concerns or discussions in the policy meetings, though several refinements in policy documents were made regarding research approaches.

In one particular policy meeting in the fifth year of the project, Vivian followed up on her intention (referred to in the previous section) to question the school board directors on how to sustain the partnership. She had prepared this meeting with the associate professor and began presenting their conference symposium, summarizing what had been achieved but also pointing to the recurrent challenge to get all teachers and teacher educators involved in the academic PDS concept. After this presentation, they pointed out that the future was still insecure, not with respect to the PDS nature of the schools but with respect to the label *academic PDS*.

The responses of the school board directors indicated that they did not entirely realize that the financial support was going to end soon. They started discussing what could be done about this also in relation to similar partnerships in the country, the professional association for teacher education, and the Ministry of Education. To guide the discussion Vivian and the associate professor sketched different scenarios, including one without financial support. The school board directors as well as the teacher education director indicated that they would prefer to continue their collaboration and that future financing of the partnership needed to be sought. One of the school board directors, however, indicated that for the directors it was also important to explicitly formulate what had been achieved so far that was a surplus compared to regular schools. This would allow them to ground their efforts with respect to finding financial support for the future.

As financial support still needed to be identified, the subsequent meeting focused on recapitulating with the actors of the BKC (see dotted lines in [Figure 1](#)) what had been achieved so far and what would be needed to further realize and sustain the initial intentions of the partnership. In response to questions from the

school board directors on how the different roles of central actors had been taken up, the various BKC members described how they had been frequently meeting and talking to one another throughout the years, which allowed for an exchange of results and concerns as well as giving one another advice. Several actors, including Zita, pointed out how they had developed individually by means of this way of collaborating, which suggests that aforementioned *transformation processes also took place at an intrapersonal level*. In reaction to this positive account of the BKC (possibly also influenced by the power relations and intended to “ensure” achievements), however, one of the school board directors started to critically question their central roles:

Board Member 1: Yes . . . Louise. Just to react to that for a moment. Because that is a question to you all. We are a community. Isn't that so? We often come together. We reinforce each other. We become better. But now, if we look at the continuity, at the sustainability. Because with all the respect . . . it is good that it begins with enthusiastic people. That is the way these things go. But we have to look at the schools, look at the future. What happens at the school, at the schools if the facilitator drops out? Then suddenly there is no internal facilitator any more, what then?

School leader at school B [new since this year]: Then the school will make every effort to find a new internal facilitator. I'm sure. Because I see what these people have been doing.

School leader at school C: You also invest in it. You start with a small group. That grows. The teacher researchers develop beyond just doing research. In our case we have two teacher researchers who will fulfill the role of internal facilitator next school year. . . . You have to invest.

Internal facilitator at school C: But indeed, that turned out to be quite a learning point for us. We had Quiana, who was our internal facilitator. The project was her baby. She totally went for it. And then she moved to work in a different school. We suddenly faced a gap. I was involved from the beginning, but I'd never fulfilled the facilitator role. It certainly was a major learning point for us at that point. We depended too much on individual people. I am currently working on organizing it differently now. We have a colleague, who is in training now, who will be more involved in the whole endeavor . . .

Adèle, school leader at school A: Yes, that was something to be aware of during these years. It applies also to the school director, how one can organize ambassadors of the vision we have as an organization. To sustain and pass on, one needs to attract ambassadors.

Several people of the BKC concurred with the comments made, emphasizing how one needed to keep working on involving people besides themselves, particularly when new teachers came into school.

The Perspectives of Five Brokers: Reflection and Transformation at the Intrapersonal Level

As mentioned in the Methods section, we conducted interviews with five actors whom we identified as the chain of brokers related to school A, all of whom can be recognized throughout the phases that we described previously. The interviews were conducted to include the perceptions of the brokers on the partnership and on their own role in this partnership, thereby allowing us to distill both challenges and learning mechanisms (see the research question) as possibly experienced at an intrapersonal level.

Interviews were conducted with Vivian, the project leader; Adèle, the school leader of school A; Zita, the internal facilitator of school A; Ruby, the teacher research educator connected with school A; and Leonore, the student teacher who spent her internship in school A in the fourth year. The description of the actions and interactions within and between the three groups indicates how these actors were central not only in terms of their formally recognized positions and chairing of group meetings but also in terms of their one-to-one conversations in preparing for the meetings and their efforts at taking information from one group to another.

Regarding the challenges as perceived by the brokers, two themes emerged from an open coding of the interviews. First of all, in line with what we identified as a recurrent issue in the observations, documents, and e-mails, all five brokers pointed to “involvement” as the biggest challenge to establishing but also sustaining the academic PDS partnership. Most prominent was the issue of how to involve other teachers in the school, not only in doing research but in applying it within their daily work. Both Zita (internal facilitator) and Leonore (student teacher) emphasized the importance of focusing on topics in line with the primary processes of teaching and learning. Vivian (project leader), Adèle (school leader), and Ruby (teacher research educator) noted that teacher educators should also become more involved with research activities in school.

The brokers referred to their own deliberate actions to improve the involvement of others. They did this in similar ways. Adèle described how she delegated the role of internal facilitator to Zita, who was one of the school teachers involved in research. One reason for this was to increase ownership among the team of school teachers. Similarly, Ruby (teacher research educator) described how she always prepared for the meetings with Zita but deliberately gave the floor to Zita and student teachers during the meetings. In turn, Zita described how she gradually gave more responsibility to the student teachers in terms of chairing parts of the SKC meetings. These actions of handing over the responsibility to prepare

and chair meetings illustrate how a chain of brokers was created and maintained. Finally, Leonore described how she (now also given the explicit responsibility for establishing linkages between research and teaching) got teachers more involved by explicitly asking for feedback and expressing their concerns in the evaluation.

Second, on a metalevel, all brokers referred to the partnership and their own position in it as having been challenging. Leonore described how she found it challenging to connect with other teachers in doing research and also to connect her research activities with her own concerns in the classroom as a new teacher. Zita described how her position as internal facilitator had been challenging as she had had to work on alignment both within the SKC in the school and in the BKC across schools. Adèle pointed to frustrations along the way as follows: “The partnership has been a process of searching, of being irritated about the limited progress. Making adjustments; yet that is doing research . . . though you sometimes want to throw your laptop out of the window.” She also referred to a recurrent dilemma she encountered with respect to participating in the BKC and being a school leader:

The thing is that in those moments one often faces a dilemma. That my presence is very much needed at school and I know that I can contribute there, while I have the feeling that I am wasting my time here [in the meetings of the BKC]. You can spend your energy only once. At those moments I say what I think is needed to go forward and try to be constructive.

More generally, Vivian spoke about her vision of this kind of educational innovation and said it inherently required bringing together different actors and going through struggles and difficult phases that even included people being angry and crying about the ongoing changes. Though facing difficulties themselves as well, both Vivian and Ruby referred to the position of the internal facilitator as being one of the most difficult positions. Internal facilitators were right in the middle of the whole shift toward an academic culture while not necessarily having an academic background themselves.

Regarding learning mechanisms evoked at an intrapersonal level, the interviews were in line with our observations, as we coded reflection and transformation processes as two consistent themes in the interviews. First, in accordance with what some brokers said in the meetings, Adèle, Ruby, Zita, and Leonore described in their interviews how they had been questioning their own research skills and whether they had what it took to conduct or supervise research activities. The explication of these doubts indicates a *reflection process at an intrapersonal level* resulting from their role in the project.

Second, brokers more or less directly talked about themselves as now owning the concept and wanting to continue working in or with schools that had an academic PDS nature (whether officially acknowledged or not). They described how they had become interested in doing research and how much could be gained by

working in schools with an academic culture. More explicitly, Leonore and Zita referred to how much they had learned from doing research themselves. These comments suggest development of a hybridized position, which is indicative of starting a *transformation* process at an intrapersonal level.

Nonetheless, in relation to their learning, an additional theme in the interviews appeared; this concerned the way the brokers experienced their own centrality in the partnership. They all considered the changes so far to be positive, yet in order to sustain the partnership they had to find a way to get other teachers and teacher educators more involved. What seemed to be an implicit dilemma was that they did not seem to know how to achieve this without themselves taking action, thereby reinforcing their own centrality rather than giving the floor to others. This dilemma was explicitly summarized by Leonore and Ruby. Ruby argued that were it not for the student teachers, research would probably not take place. In line with this Leonore admitted that she had been so active in the SKC that “it is difficult to withdraw from it,” and she also felt that she was “the one who keeps it alive.”

DISCUSSION AND CONCLUSIONS

After the rise of PDS partnerships in many countries, it has become clear that establishing and sustaining these partnerships is a huge challenge. The aim of this study was to understand this challenge by means of a multilevel boundary crossing framework. A boundary crossing perspective acknowledges teacher education, schooling, and academic research as reflecting institutions that are socially and culturally different and allowed us to study the challenges and learning mechanisms involved in establishing new relationships and a new culture with respect to engaging in research on teaching practices. Moreover, by adopting a multilevel perspective on boundary crossing we aimed to explore challenges and learning mechanisms at different levels simultaneously, asking the following: What challenges are encountered and which successive learning mechanisms are evoked in the startup of an academic PDS partnership at the institutional, interpersonal, and intrapersonal levels?

As to the challenges that were encountered, we identified mainly one recurrent challenge in the PDS partnership: the involvement of various actors. Instead of there being schoolwide involvement including all school teachers, to which the partners seemed to have aspired, the brokers who were central in leading the new PDS meetings and activities turned out to be most involved.

As to the analysis of learning mechanisms, the case study narrative showed four successive phases: coordination, identification, reflection, and transformation. Although we found coordination in the first 3 years at all levels, the subsequent learning mechanisms were visible in later years, and only at the interpersonal and intrapersonal levels. This suggests that only particular actors learned with respect

TABLE 3
 Successive Learning Mechanisms at Multiple Levels in a Dutch Academic PDS Partnership

<i>Learning Mechanism</i>	<i>Level</i>		
	<i>Institutional</i>	<i>Interpersonal</i>	<i>Intrapersonal</i>
Identification		2 (SKC)	2 (school teachers)
Coordination	1 (PM)	1 (PM, BKC, SKC)	1 (brokers)
Reflection		3 (SKC, BKC)	3 (brokers)
Transformation		4 (BKC)	4 (brokers)

Note. The number in the cell refers to the chronology of this process at the respective level. Text in parentheses indicates to which group (interpersonal level) or type of actor (intrapersonal level) the process applied. PDS = professional development school; SKC = small knowledge community; BKC = broad knowledge community; PM = policy meetings.

to the aspired integration of research, teacher education, and teaching, whereas the other actors in the institutions mainly came to learn about the differences between these activities. Table 3 gives an overview of the different learning mechanisms at different levels in subsequent phases. As we now explain, this chronology is not entirely surprising.

It is not surprising to find coordination as the first phase. It shows an understandable pragmatic and organizational approach to integrate research, teacher education, and teaching with a new infrastructure meant to create interorganizational connections (see Figure 1 for an overview). As the decisions for this infrastructure were made up front by the various managers, the attempt can be seen as a typical top-down approach. Top-down approaches are very common in organizational change processes, as managers do not tend to allow for much uncertainty and often approach change technically and as a project-based matter (Boonstra, 2004). Noteworthy in this case is how the various groups (representing the interpersonal level) as well as the central actors leading these groups (representing the intrapersonal level) initially took over this focus on coordination, with their main concern being to “have meetings” and to “share information.”

Again not surprising is the way in which this coordination process led to a counter-reaction in the form of an identification mechanism, yet now as a bottom-up process: Within the various school groups (SKC), school teachers started to identify the research activity as something they considered to be separate from their daily teaching and consequently as something they did not perceive as relevant. Thus, the school leaders mainly learned to see the differences between research and teaching. What seemed to complicate the PDS partnership here is the challenge of integrating not two but three different practices simultaneously. In school A, for example, the school leader and the internal facilitator were successful in connecting teacher education and research by giving student teachers

a prominent role in the SKC, yet precisely this effort seemed to have the effect that the school teachers did not become very involved in research. This instance shows how establishing continuity in one direction can reinforce discontinuity in another direction, illustrating how boundary crossing endeavors may be many sided.

The two successive phases of reflection and transformation from the last 2 years onward appear to be a direct result of the identification process; it became obvious that something needed to be solved in order for the partnership to realize its ambitions. Yet this reflection and transformation was not visible at all levels and did not apply to all actors. The teachers' identification of research as being too separate from daily school teaching led in the SKC to reflection, but only to a minimal extent. Though teachers referred to their consumer stance in the SKC, the main solution was sought in terms of giving more time and focusing on research topics that were considered relevant from a daily teaching perspective. In the BKC, the reflection process was more elaborate, as the basic assumption of the partnership about research being a stepwise activity was critically questioned. The difference between the two groups in the amount of reflection probably has to do with the different power relations that existed in the two groups, with the SKC showing a strong dependency of the teachers on the school leaders' policy. In contrast, the various internal facilitators and school leaders in the BKC showed more equal relationships. Another explanation for the more elaborate reflection in the BKC might be the bigger responsibility of the group at the middle management level to make the partnership a success.

The last phase of transformation appears as an effect of the reflection processes that took place in the BKC. The boundary crossing literature has shown how confrontation with a problem often makes clear to the involved participants the need for more fundamental change (Akkerman & Bakker, 2011). In this case, reflection on how to involve school teachers led the BKC to collaboratively question what "academic" means in an academic PDS partnership. These discussions changed members' understanding of research over time. Rather than being about "participating in the required technical steps of the research model" or "joining the SKC meetings," research was redefined as being about "an academic attitude," about establishing "a research culture," and about "owning" the academic PDS "as a concept." This shift in perspective led the BKC group to define a research agenda themselves to explore how this could be established. Besides leading to a transformed understanding of research, relationships between the various actors in the BKC seemed to be strengthened. This was visible in the conference symposium that the BKC decided to organize together as well as in the way they collaboratively responded to the school board members when joining the policy meetings, although the latter should also be seen as a political act of the BKC before the school board.

Although the BKC showed reflection and transformation at the interpersonal level of this group changing its perspective, these processes also had an

intrapersonal effect. This was seen both in the observed meetings as well as in the interviews with the brokers. Along with the group discussions, the individual members of the BKC, all brokers, started to openly question (during meetings as well as in the interviews for this study) their own skills in conducting or supervising research. Despite doubting their own research skills, they also started to refer to themselves as transformed people in terms of having developed a hybridized position; they indicated in the interviews that they strongly favored working in an academic PDS school rather than a regular school, despite the frustrations and doubts they had encountered along the way. By referring in meetings to others not owning the concept of academic PDS, the brokers implied that they now owned the concept themselves. Another sign of transformation can be seen in their reluctance to take a more distant position in the partnership activity. Although they seemed to perceive their own centrality as preventing others from becoming more involved, they were also afraid that completely stepping down would mean the end of the academic PDS activity that they had managed to establish.

Two notes should be made regarding the reflection and transformation processes that were visible for the BKC and brokers. First, both the discussions of the BKC and the self-positioning of the brokers within the group and interviews were not entirely neutral. The organizational responsibilities of the BKC and brokers to lead the PDS activities may also have created a social and political landscape in which they felt the need to be positive, to show progress and signs of reflection and transformation. Besides a different formulation of the PDS concept and a new research agenda, the new ideas of the BKC and brokers did not, at least within the time frame of our study, lead to any substantial activity. Second, it is striking to see how reflection and some signs of transformation did not move beyond the BKC and the brokers in the project. It appears that the school teachers remained unaware of the discussions and reconsiderations of the meaning of the concept of academic taking place in the BKC. This leads us to some conclusions about the role of brokers in the partnership.

Being positioned as leaders of the three groups and collaborating and critically discussing together in the BKC, the brokers seemed to function as a chain: They had different hierarchical positions in the organizations, and their efforts were oriented at establishing the horizontal connections across the involved organizations as well as the vertical connections within their organizations. In this way, they were most active in trying to integrate schooling, teacher education, and research and made sure that the lack of involvement of school teachers initially encountered within the SKCs in the schools became a topic on the agenda of the BKC and the policy meetings. The importance of a chain of brokers at work as we have seen in this case is in line with the value of having webs of people spanning organizational groupings and infrastructures, as has been stressed in both organizational research and social network theory (e.g., Boonstra, 2004; Granovetter, 1973; Stein & Coburn, 2008).

Nonetheless, this case also shows the threat of having a chain of brokers at work. It is mainly the brokers who showed some transformation individually and as a group, starting to own and embody the concept that was originally targeted at the institutional level. Though being very active and putting a lot of effort into the partnership, the chain of brokers also prevented others from becoming more involved. A central stance of leaders is indeed known to prevent ownership and agency among other participants (Engeström & Sannino, 2010). Nonetheless, the case also showed how broker positions can be successfully transferred to other persons. In school A, the school leader deliberately asked one of the school teachers to replace her as chair of the SKC. In turn, the internal facilitator later asked student teachers to chair some of the SKC meetings. Both actions were reported as attempts to increase the ownership of the other person and also appeared to have this effect. These instances suggest that broker positions are not statically connected to persons and that structural positions can be circulated in order for various actors to become involved.

The finding that chains of brokers can be the backbone of a partnership, with both positive and negative effects, contributes to previous research on PDS partnerships mentioned in the introduction (e.g., Breault & Breault, 2010; Darling-Hammond, 2005); it shows that these new interorganizational initiatives are challenging not only technically, structurally, socially, and culturally but also *personally*. As this study presents a single case, we recommend further research on the centrality of brokers, for example, a comparison of cases in which chains of the same brokers remain central in interorganizational partnerships and cases in which chains of brokers gradually withdraw in favor of others taking a more central position in the partnership.

On a conceptual level, this study contributes in two ways to further research. First, it shows a tentative pattern of boundary crossing processes, whereby after an initial period of coordination, identification occurred, which led in turn to reflection and signs of transformation. This pattern is in line with what Akkerman and Bakker (2011) hypothesized about the strengthening and successive relation between identification, reflection, and transformation. Second, this study elaborates the boundary crossing framework by distinguishing three nested levels of analysis. This conceptual distinction allows us to look at boundary crossing in a more fine-grained way. We recommend, on the basis of this study, not isolating one level of analysis but instead taking into consideration the possibility that boundary crossing processes can occur at multiple levels, that is, at the institutional, the interpersonal, and the intrapersonal levels simultaneously. Besides, despite these levels being nested, this study shows that one cannot assume the same type of processes at the different levels: One can find a predominant process of coordination at the institutional level but a transformation process at the intrapersonal

level. This means that conclusions about the nature of organizational change may be multifaceted in nature.

With respect to implications for PDS partnerships, this case study shows that integrating teacher education, research, and schooling is an ambitious aim, even for a 5-year program. It can lead to an ongoing struggle, at least when the expectation is that every teacher has to be part and parcel of the integrated research and teacher education activity in school. Given the observed disappointment about the lack of school teachers' involvement, this was indeed the expectation of the academic PDS partnership studied, although this was never explicated as such.

As it is often not clear what kind of change is aspired to by a partnership and to what extent this is realistic in the given time frame, a recommendation for PDS partnerships following this study is to be more specific about their developmental aims, that is, to consider what learning mechanisms at what levels of boundary crossing are envisaged at different points in time. Having more specified developmental aims can allow for more deliberate choices in who to involve and how to involve them in PDS activity through time. Specific attention should be paid to the role of brokers. The brokers might not be immediately visible but can be identified as those people who are positioned at the intersection of different hierarchical levels as well as the different collaborating organizations or organizational units. When these brokers appear to have most responsibility for establishing continuity across different practices, they are likely to have a challenging political position and can probably gain from organizational recognition and support. For sustainability reasons, however, PDS partnerships might gain from circulating broker positions over time among various actors rather than relying too strongly on a few actors doing the crossing. This or alternative approaches is needed to make sure that others can also be involved and consequently learn from mutual activity in research, teacher education, and teaching learning, as is typically aspired to in PDS partnerships.

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