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Connecting practice-based research and school development. Cross-professional collaboration in secondary education

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Publication date
2015
Document Version
Final published version

Link to publication

CHAPTER 1

General introduction

Introduction

In the last decade, we have observed a rise of research and development (R&D) projects in education in the Netherlands. In these projects, school leaders and teachers are engaged with researchers, advisers, and supervisors in various sorts of research and development activities in schools. R&D projects in schools create the opportunity to connect practice-based research to school development. It is often stated that it is difficult to create a strong linkage between research and practice (Burkhardt & Schoenfeld, 2003). Practice-based research is seen as research aimed at generating useful knowledge on and for educational practice (McLaughlin & Black-Hawkins, 2007; Vanderlinde & Van Braak, 2010). Governments in the Netherlands and elsewhere encourage school leaders to instigate R&D projects in schools. In various countries, government funding is provided to school practitioners and researchers to perform research and stimulate school development in a collaborative effort (NAPDS, 2012; NTRP, 2012; Nutley, Jung, & Walter, 2008; Onderwijsraad, 2011; Yashkina & Levin, 2008; SEED, 2002). In this context of R&D projects cross-professional collaboration between educational practitioners and educational researchers will be investigated. At the core of this dissertation is the aim to acquire a better understanding of processes and results of R&D projects in secondary education, in which practice-based research and school development are connected through cross-professional collaboration.

Theoretical background

School development and practice-based research

School development refers to the activities in a school that aim at improving educational practices. These activities may range from alterations in teaching practice, to new forms of collaboration in teams, to changes in the structure and culture of the whole school organization (Massel, Goertz, & Barnes, 2012; Sleegers & Leithwood, 2010; Walter, Nutley & Davies, 2005). The process of school development is often started with an emerging vision and the construction of a plan, which are followed by actual changes in school practices (McLaughlin &

Black Hawkins, 2004; Sleegers & Leithwood, 2010). The last decade showed an increase in attention in the educational field to ways of having practice-based research inform this process of school development, for instance, by critically monitoring the whole process of school development or by evaluating specific innovations in practice (Sleegers & Leithwood, 2010). In practice-based research, the research question is mostly locally oriented and contextual (Coburn & Stein, 2010). It is a research approach with a focus on generating useful knowledge for practice. Depending on the research goal and question, a choice is made for certain types of research, such as design-based research (McKenney & Reeves, 2013) or specific forms of formative and summative evaluation (Nutley et al., 2008; Penuel, Fishman, Cheng, & Sabelli, 2011). These types of research often consist of multiple cycles of the stages of problem analysis, implementation and evaluation. Practice-based research may provide school leaders and teachers with evidence on 'what works in their practice,' support teachers in integrating knowledge from research into their contextual and local understanding of practice, and generate new knowledge on teaching and learning (Cooper, Levin, & Campbell, 2009; Janssen, Westbroek, Doyle & Van Driel, 2013).

However, the processes of school development and practice-based research have a different rhythm, as the pace of research is slower and the stages are dissimilar. Nevertheless, there is also a resemblance between the rhythms of school development and practice-based research: both are of an iterative character with multiple cycles of stages that reoccur (Bauer & Fisher, 2007). The resemblance in iterative character offers the opportunity for an interplay between practice-based research and school development: a continuing process, in which the knowledge created in practice-based research provides a better understanding of school practice and strengthens school development and school development is in turn a source for research (Burkhardt, 2006; Levin, 2004). In this manner, research results and gained research knowledge can be fed back to school practice (Clow, 2012; Grimpe, Hartswood & Jirotka, 2014).

Practice-based research and school development are originally rooted in, respectively, the academic research field and the school field. One of the problems noted in literature is the weak alignment of educational research with school practice, as they are separated by a gap (Broekkamp & Van Hout-Wolters, 2007; Gore & Gitlin, 2004). A strong connection could contribute to practical improvements in schools (Hargreaves, 1999; Levin, 2013). Connecting practice-based research and school development, as well as closing the gap between the academic research field and the school field, requires several initiatives and incentives. A promising context to establish such connections is R&D projects in education.

R&D projects

R&D projects in schools are considered as trajectories in schools in which school leaders, teachers, and researchers, advisers, and supervisors are engaged in activities of practice-based research and of school development. R&D projects can focus on different themes, such as innovative learning concepts for students or professional development programs for teachers. An example of an R&D project in education is a project in which teachers examine pedagogical approaches for highly gifted students, make alterations in their teaching practices using their new insights, and are interviewed by researchers on what they learned. Another example is a project in which researchers develop an instrument on the reading abilities of students and evaluate test scores of students who followed reading lessons that were introduced in school.

   Governments in countries around the world stimulate R&D projects in schools, for example, through funding that encourages teachers to perform practice-based research and collaborate with researchers (NAPDS, 2012; NTRP, 2012; SEED, 2002). A funding scheme can provide various types of professionals, such as teachers and researchers, with time and resources to collaborate. R&D projects in schools provide the context for cross-professional collaboration to occur.

Cross-professional collaboration

Collaboration between school leaders, teachers, and researchers, advisers and supervisors in practice-based research is increasingly common in countries such as the United Kingdom, the United States and the Netherlands (Nutley et al., 2008; Yashkina & Levin, 2008). In this dissertation, the term cross-professional collaboration is introduced for this process. The term 'cross-professional' particularly expresses the potential for 'cross pollination' among the professionals and emphasizes the professional background of the school leaders and teachers, as well as the researchers, advisers, and supervisors. Cross-professional collaboration can be defined as a process in which the various professionals involved come together for a diversity of reasons to achieve project goals by guiding, directing and performing research and development activities, and via mutual communication (Penuel, Fishman, Cheng, & Sabelli, 2011; Van de Ven, 2007; Wagner, 1997). Collaboration between professionals in schools and from research institutes can take different shapes and have different characteristics. The collaboration ranges from teachers who are engaged in a study on student learning outcomes with the aid of a supervisor, to researchers who conduct research on a school's language policy in collaboration with the school board (Cochran-Smith & Lytle, 1999; Darling-Hammond, 2010; Geijsel, Krüger, & Sleegers, 2010). Several studies provide illustrations of how collaboration

between researchers and teachers is shaped, for instance, in school-university partnerships (Coburn & Stein, 2010; Hora & Millar, 2011; Nutley et al., 2008; Penuel et al., 2011; Van de Ven, 2007). However, in educational research little attention has been paid to using empirical data to systematically analyze what the main characteristics of cross-professional collaboration are and what results this has for the professionals and schools involved.

Boundary crossing

Traditionally, school leaders and teachers seldom meet researchers, advisers, and supervisors. These professionals usually belong to different communities and fields of work—the school field and the research field—and these communities have their own rules and motives (Broekkamp & Van Hout-Wolters, 2007; Vanderlinde & Van Braak, 2010; Wenger, 1998). A promising concept to investigate how these professionals can establish a link between their fields and create a relationship is the concept of boundary crossing (Hora & Miller, 2011; Taylor, 2008; Tsui & Law, 2007). Boundary crossers are referred to as "cultural brokers who can walk between worlds and translate the cultural models of one group for another" (Hora & Miller, 2011, p. 92-3). Collaborating with professionals from different fields that may have diverse goals for a project can stimulate them to cross boundaries and thereby learn from each other and of the field of the other. This happens, for example, when professionals reflect on their own professional roles and tasks when they compare them to others (Akkerman & Bakker, 2011). The concept of boundary crossing may be useful to examine what and how professionals learn in the context of cross-professional collaboration in R&D projects.

School leaders and research engagement

R&D projects offer school leaders an opportunity to encourage research engagement in their schools. By introducing the term research-engaged schools, Handscomb and MacBeath (2003), have put emphasis on schools in which school leaders are aware of research taking place in school and stimulate teachers to take a critical stance, pursue their curiosity, and be evidence-informed in their daily work routine. Research engagement offers teachers a chance to improve their teaching practice informed by research (Sackney & Walker, 2007). Godfrey (2014) notes that school leaders should pay attention to research engagement in school as a long-term, sustainable improvement strategy (see also Levin & Datnow, 2012). In his study, Godfrey (2014) suggested that research engagement is differently embedded in school culture depending on stages of development. These stages of development are made explicit in earlier research on teacher learning communities by McLaughlin and Talbert (2006). In the most

advanced stage, teachers and school leaders are, for instance, able to integrate results of research on teaching and learning in decisions at all levels in a school (whole school, subunit and classroom). However, little is known about what views school leaders have with regard to encouraging research engagement in their schools.

This dissertation

Aim of this dissertation

In this dissertation, R&D projects in Dutch secondary education are studied. Professionals in these R&D projects worked on innovations in schools and performed practice-based research. The professionals involved in R&D projects are, on the one hand, school leaders and teachers and, on the other hand, researchers, advisers, and supervisors who work in universities and in research and advisory institutes.

The aim of this dissertation is to obtain a better understanding of the processes and results of R&D projects in secondary education in which practice-based research and school development are connected through cross-professional collaboration between school leaders and teachers on the one hand, and researchers, advisers, and supervisors on the other.

Research questions

The main research question of this dissertation is as follows:

> *What processes and results occur in the context of cross-professional collaboration of school leaders and teachers with educational researchers, advisers, and supervisors in R&D projects in secondary education in terms of learning by participating professionals, school development, and the encouragement of research engagement in schools?*

To answer the main question, four sub-studies were conducted. These studies were guided by the following specific research questions:

1.a. *What differences and similarities in cross-professional collaboration in R&D projects can be specified in terms of reasons for collaboration, the division of roles and tasks, and the communication structure?*

1.b. *What types of cross-professional collaboration can be derived from these differences?*

2.a. *Which learning mechanisms are characteristic for boundary crossers in collaborative R&D projects?*

2.b. *How are types of cross-professional collaboration and learning mechanisms of boundary crossers related?*

3.a. *What types of changes occur in schools that are informed by practice-based research performed in R&D projects in secondary education?*

3.b. *How is feedback from practice-based research to school development organized?*

3.c. *Which conditions contribute to a productive interplay between practice-based research and school development?*

4. *To what extent and how do school leaders use the opportunity of participating in an R&D project for encouraging and integrating research engagement in their schools?*

This dissertation covers the entire three years of the funding scheme. Research questions 1a and b include the first year of the funding scheme, in which twelve projects were started. Research questions 2a and b cover the first two years and include nineteen projects. Research questions 3 (a, b, c) and 4 cover the entire period of the funding scheme and include nineteen projects.

Method

Selection of cases

In this multi-case study design, nineteen R&D projects in Dutch secondary education were included (Yin, 2009). The R&D projects were part of a funding scheme of the Dutch Council for Secondary Education. The first cohort consisted of twelve R&D projects that were funded by the funding organization; these projects were all nominated to take part in the study. For the second cohort of twenty R&D projects, a selection was made of seven projects to be included in the study. To ensure variety in the case studies, projects were selected in which other themes were prominent than in the first cohort, and in which other educational researchers were involved. See Table 1 for an overview of projects in the first and second cohorts. The original project names and school names were made anonymous by renaming them Project A to S. General characteristics of the nineteen projects are also shown in Table 1.

The projects received funding for research purposes for one, two, or three years after the funding application was accepted. The school concerned had to apply for the funding and was responsible for the possible transfer of the research budget to a party with research expertise, which could be universities, universities of applied

sciences, teacher education institutes and research and advice bureaus. The funding scheme corresponds with a broader policy approach that can be characterized as an inside out approach. In such a policy approach, the needs of schools drive research goals (Crossley, 2013). The aims of the funding organization were that the research would contribute to school development and would yield knowledge

▾ **Table 1 |** General characteristics of the R&D projects

Project code	Cohort	School locations	External organization	Content of project	Type of research
Project A	1	1 school; 2 locations	Research bureau	Policy interventions in students' language and arithmetic skills; evaluation of students	Evaluation research
Project B	2	1 school; 1 location	University	Teachers develop and evaluate the functioning of mind maps for students	Design-based research
Project C	2	1 school; 1 location	University of applied sciences	Develop instrument to measure teaching skills; evaluation of teachers	Instrument development and evaluation research
Project D	1	2 schools; 2 locations	Research and advice institute	Develop educational theory and methods model for teenagers' school; evaluation of pilots	Design-based and evaluation research
Project E	2	1 school group; 2 locations	University	Develop program for gifted students; evaluation of students	Evaluation research
Project F	1	1 school; 1 location	University	Teachers develop teaching method for highly gifted students	Design-based research
Project G	1	1 school group; 4 locations	University	Develop instrument to measure reading skills	Instrument development
Project H	1	1 school group; 5 locations	University teacher education	Teachers develop teaching method for reading skills; evaluation of teachers' professional development	Design-based and evaluation research
Project I	2	1 school group; 5 locations	University teacher education	Teachers develop teaching method for differentiating in classroom; evaluation of students	Evaluation research
Project J	1	1 school; 1 location	University teacher education; research and advice institute	Teachers design teaching material; evaluation of students and teachers	Design-based research and evaluation research
Project K	1	1 school; 1 location	University of applied sciences; research institute	Implement games in lessons; effect evaluation of students	Effect research
Project L	2	1 school; 1 location	Research and advice institute	Implement pilots for reaching for healthy students; evaluation of students	Evaluation research
Project M	1	1 school; 1 location	University teacher education; research institute	Research on use of school exams protocol, evaluation of mentor program, and evaluation of alumni	Design-based and evaluation research

Project code	Cohort	School locations	External organization	Content of project	Type of research
Project N	2	1 school; 1 location	Research and advice institute	Implement program for authentic assignments for students; evaluation of students	Evaluation research
Project O	1	3 schools; 3 locations	Research and advice institute	Teachers develop digital lessons; evaluation of students	Design-based and evaluation research
Project P	1	8 schools; 13 locations	Research and advice institute	Insight into instruments showing effectiveness of learning-support resources	Monitoring and evaluation research
Project Q	1	1 school group; 3 locations	University of applied sciences; advice institute	Develop instrument to measure reading skills after reading lessons; evaluation of students	Instrument development and evaluation research
Project R	1	1 school; 1 location	University teacher education; university of applied sciences	Teachers develop their teaching skills; evaluation by teachers of teachers' professional development	Instrument development and evaluation research
Project S	2	1 school; 1 location	University of applied sciences; research bureau	Designing games and integrating games in lessons; evaluation of students	Evaluation research

that could be broadly shared in the education field. In this dissertation, the focus is on the first aim. The context of the R&D projects offered the opportunity for a longitudinal study to study the progress and results of the projects on the issues of professional learning, school development, and research engagement.

Participants in the study

In the R&D projects, professionals from schools and educational research institutes were involved, including school leaders, teachers, and researchers, advisers, and supervisors. These professionals were the participants in this study. Interviews were conducted in four rounds: at the start of the project (round 1), the end of the first year (round 2), the end of the second year (round 3) and at the end of the projects (round 4) when the funding of the projects ended. In Table 2, an overview is given of the number of interviewed project participants and their roles sorted for the four rounds of interviews. In total, twenty-eight different school leaders and teachers who functioned as project managers in their schools were interviewed, as were twenty-three different researchers from research and educational support institutes. In most schools, the same professionals were involved from round to round, but in one school we interviewed a different project manager in round two and three, in one project two project managers were assigned, in some projects a shift in project manager in the final year took

▼ **Table 2 |** Project participants and their roles sorted by round of interview

	Round 1	Round 2	Round 3	Round 4
Project manager*	19	19	16	20
School principal/ assistant principal**	8			8
Teacher researcher			9	
Researcher, adviser, supervisor	19	19	16	20

* Project managers had a function of school leader or teacher in their school

**These school principals/assistant principals were not involved in the project itself

place and in three projects other educational researchers got involved during the process. To acquire more information on the views and opinions of school principals and teacher researchers in the projects, eight school principals were interviewed in the first and final year of the projects, and nine teacher researchers were interviewed in the third round of interviews (see Table 2).

Data collection

For the purpose of triangulation, a variety of data sources were used in this study. Data were systemically gathered by document analysis, by observing meetings, and by conducting semi-structured interviews. The documentation concerned project applications, progress reports by project managers, final research reports, and reports of small conferences in which experiences were shared between professionals of different projects. The documents were used in the preparation of the interviews as well as in the analysis of the interviews as background information on the projects and the professionals. The author of this dissertation carried out observations in two types of meetings, those in which professionals shared research results within the project team and meetings in which teachers and school leaders that were not participating in the project were informed about the progress and results of the projects. The observations were used as background information for interpreting interview data.

Triangulation was also aimed for by interviewing a mixture of project participants. Each of these professionals could have different experiences and perspectives on collaborating in the R&D project. Attention was paid to the individual and collective sense-making of the professionals involved in the projects, for instance, in considering their vision on practice-based research and school development (Guba & Lincoln, 1994). All interviews with the professionals in the projects were based on pre-structured interview guidelines. These interview guidelines contained questions about the goals of the

R&D project, the progress made in the project, the practice-based research (concerning research goals, type of research, and created knowledge), the occurrence of changes in school (i.e., school development) and of research engagement in school, the participant's vision on practice-based research, school development and research engagement in school, and about cross-professional collaboration among the professionals in the projects (concerning reasons for collaboration, division of roles and tasks, communication, and perceived successes and barriers).

Data analysis

The qualitative data were analyzed with coding schemes that were developed based on the literature and with the interview questions in mind. The software program MaxQDA (version 10) was used for coding the interview fragments for each research question. Selected interview fragments and information on the projects and professionals were subsequently organized in within-site matrices and cross-site matrices, depending on the research question (Miles & Huberman 1994). Understandings of observations of meetings at schools and document analysis were used as information to interpret the interview fragments. Information on the operationalization of key concepts and more detailed explanations of data analyses are found in the method sections in chapters 2, 3, 4, and 5.

Relevance of this study

This study is relevant from a theoretical, a practical and a policy point of view. The theoretical relevance lies in the first place in investigating cross-professional collaboration, as it is a fairly recent phenomenon in the educational field and little is known about its characteristics when educational practitioners and educational researchers work together in R&D projects. Secondly, this study offers insights into what processes and results professionals from different fields of work and communities come across as they work on research and development activities in secondary schools in a collaborative effort. It is not yet known what learning processes occur when professionals cross boundaries in this context. Additionally, little attention has been paid in the literature to conditions under which practice-based research can actually inform school development and to what an R&D project can mean for school leaders who wants to encourage research engagement. These insights add to the recurrent discussion on bridging the gap between the school and the research field, by connecting practice-based research and school development.
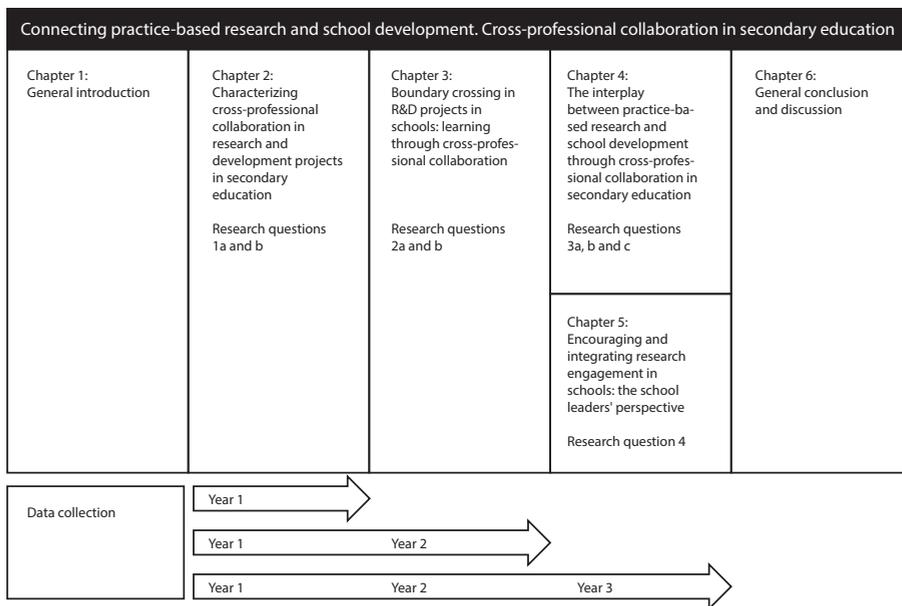
The practical relevance of the study is that it may provide insights for professionals who are or will be involved in R&D projects and for policy makers. A

current question in the education field is how school practitioners can collaborate with researchers to find ways to connect practice-based research and school development. The recently founded Dutch Funding Institute for Educational Research (NRO, 2015) aims to contribute to the connection of educational research and practice and to the improvement and innovation of school practice through practice-based research. Recently, the Dutch Commission Sector Plan Educational Sciences (Commissie Sectorplan Onderwijswetenschappen, 2015) argued for the realization of 'academic workplaces' in which university researchers, school leaders, and teachers can perform research grounded in questions relevant to schools. This dissertation intends to provide a better understanding of, for instance, conditions under which school development is informed by research and actions school leaders can take to encourage research engagement in their school. For policy makers, this dissertation can provide insights in the processes and results yielded by a funding scheme that aims to connect research and school development.

Schematic overview

A schematic overview of this dissertation and its consecutive chapters can be found in Figure 1.

▼ **Figure 1 |** Schematic overview of this dissertation

Connecting practice-based research and school development. Cross-professional collaboration in secondary education				
Chapter 1: General introduction	Chapter 2: Characterizing cross-professional collaboration in research and development projects in secondary education Research questions 1a and b	Chapter 3: Boundary crossing in R&D projects in schools: learning through cross-professional collaboration Research questions 2a and b	Chapter 4: The interplay between practice-based research and school development through cross-professional collaboration in secondary education Research questions 3a, b and c	Chapter 6: General conclusion and discussion
			Chapter 5: Encouraging and integrating research engagement in schools: the school leaders' perspective Research question 4	

Data collection	Year 1 →			
	Year 1	Year 2 →		
	Year 1	Year 2	Year 3 →	

Overview of the dissertation

In the next chapters of this dissertation, four sub-studies are presented that each build upon the understandings gained in the previous chapters.

Chapter 2 provides insights in the characteristics of cross-professional collaboration in R&D projects between school leaders, teachers, and educational researchers, advisers, and supervisors in terms of three dimensions: reasons for collaboration, the division of roles and tasks, and communication. Four types of cross-professional collaboration in R&D projects are distinguished based on patterns of these dimensions.

The aim of **chapter 3** is to create a better understanding of the learning by boundary crossers who are involved in R&D projects in schools. In this chapter, four learning mechanisms are introduced: *identification, coordination, reflection, and transformation* (Akkerman & Bakker, 2011). The learning processes of school leaders, teachers, and researchers who are collaborating in R&D projects will be characterized with these learning mechanisms in mind.

In **chapter 4**, the focus shifts to a question that involves learning on the organizational level: how can professionals in R&D projects create a productive interplay between practice-based research and actual changes in school practice. The aim is to establish a deeper insight into results, processes, and conditions for the interplay between practice-based research and school development in the context of R&D projects in secondary schools.

The aim of **chapter 5** is to explore to what extent and how school leaders who participated in R&D projects with their school, used the project to encourage and integrate research engagement in their schools.

Chapter 6 contains a summary of this dissertation and a discussion of the main findings.