EMPOWERING PRE-SERVICE TEACHERS THROUGH INQUIRY

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Development of an inquiry stance in intended, implemented and attained curriculum of primary teacher education

Lidewij van Katwijk

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Empowering pre-service teachers through inquiry

Development of an inquiry stance in intended, implemented and attained curriculum of primary teacher education

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PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

CHAPTER 1

General introduction

This chapter introduces the context, main aim and research questions underlying this thesis. It clarifies definitions and main concepts regarding pre-service teacher inquiry, as well as the applied framework of analysis. This general introduction concludes with an outline of the studies presented in this thesis.

1 Introduction

Since about ten years, pre-service teacher research has been a compulsory component of the primary teacher education programme in the Netherlands. Over 90 % of the pre-service teachers primary education attend a bachelor programme at a university of applied sciences, which are traditionally more focused on teaching than on research. Pre-service teacher research was introduced after the declaration of Bologna, which aimed to harmonise European higher education systems. Student research emerged as a suitable and popular way to teach and assess the core competences as described by the Dublin descriptors (Griffioen, 2014). Implementing research activities in the curricula of universities of applied sciences turned out to be complicated because these institutes lack research experience and culture (Verburg & Elen, 2013). In the Netherlands, research universities are focused on research and served as an example for curriculum design on research education in universities of applied sciences. In universities for applied sciences, teacher educators, who are often recruited because they have had successful teaching experience in primary schools, have had to learn to conduct research themselves, in addition to professionalize in teaching research skills and supervising student teachers' research and inquiry (Geerdink et al., 2015). The pressure to improve research education was high, because the last accreditation round for primary teacher education in 2015 has focused on the quality of capstone projects, which are pre-service teacher research projects assessed by teacher educators with scoring rubrics on research reports. After all the institutes were accredited in 2015, the question 'How can we implement research in our curriculum?' has shifted to 'Why did we implement pre-service teacher research? Do we get better teachers?' Pre-service teacher research takes a great deal of effort and is time consuming and demanding (Maaranen, 2009; Reis-Jorge, 2007). It also takes time away from the more practical and more highly appreciated aspects of the curriculum (Dunn, Harrison, & Coombe, 2008; Joram, 2007), which raises the question, 'What is the purpose and value of pre-service teacher research?'

The assumption is that knowing about research and conducting research oneself strengthens the quality of teaching. Teachers who use practitioner research as a professional learning strategy are encouraged to substantiate their actions with the scientific knowledge of others and are more aware of their own professional goals to improve practice (Darling-Hammond, 2017; Livingston & Flores, 2017; Menter, Peters & Cowie, 2017). Teacher education is assumed to play a crucial role in enhancing and

influencing pre-service teachers' affective and cognitive attitudes toward research and developing their research skills (e.g., Aspfors & Eklund, 2017; Maaranen, 2009; Munthe & Rogne, 2015; Van der Linden, Bakx, Ros, Beijaard, & Vermeulen, 2012). Internationally, attention to research in teacher education has been increasing for decades, largely because research literacy is assumed to constitute an important foundation for teachers' professional development (BERA-RSA, 2014; Sachs, 2016). Researchers agree that to meet twenty-first-century education challenges and increase educational quality, pre-service teachers must learn how to conduct research (Aspfors & Eklund, 2017; Hökkä & Eteläpelto, 2014; Menter, 2015), noting that it can give them confidence, skills and knowledge that will empower them as autonomous educators and also may increase their ability to innovate in their professional careers (e.g., Castle, 2006; Dunn et al., 2008; Reis-Jorge, 2005). In the past few years, a considerable number of studies about pre-service teacher research in various countries (e.g., Finland, Norway, Sweden, Romania, Portugal, the United Kingdom, the United States) have been published (e.g., Aspfors & Eklund, 2017; Cochran-Smith, Barnatt, Friedman, & Pine, 2009; Flores, 2018; Gray, 2013; Ion & Iucu, 2016; Råde, 2019; Ulvik, Riese, & Roness, 2017). However, these studies all focus on the (post-)graduate level at research universities, in which experience with, knowledge of and attitudes toward research are different than at universities of applied sciences. These research universities generally aim to train academics who are able to create new knowledge by using sophisticated and complex research methodology. By contrast, less is known about pre-service teacher research in professional bachelor's degree programmes (for exceptions, see, Baan, Gaikhorst & Volman, 2019; Munthe & Rogne, 2015; Van der Linde et al., 2012).

In general, research on the effectiveness of teacher education pedagogy is rare. Most research is descriptive, involving one or two programmes, and is not focused on the impact of a specific pedagogy on pre-service teacher or teaching quality (Grossman, 2005; Van Veen 2013; for an exception, see Brouwer & Korthagen, 2005). An abundance of work exists on teacher education and its core practices (e.g., Grossman, Hammerness & McDonald's, 2009; Korthagen, 2010; Loughran & Hamilton, 2016); however, the effectiveness of these core practices as it relates to the quality of newly qualified teachers is not addressed. Although some studies indicate that pre-service teacher research can contribute to professional development (e.g., Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005), convincing empirical research that shows the effectiveness of specific teacher education pedagogies is still scarce (Van Veen, 2013).

Considering the many positive claims made about the value of pre-service teacher research and inquiry as a teacher education pedagogy and the lack of studies regarding its learning outcomes in a bachelor's degree programme, the main question of this thesis is as follows: What is the added value of pre-service teacher inquiry in primary teacher education?

2 Previous research

The past decades have witnessed worldwide growth in attention to practitioner research and the role of pre-service teacher research in teacher education. In Appendix A, we present an overview of previous research, identifying the focus, countries involved, main findings and methodology of these studies. We determined that although findings from master's degree and post-graduate programmes in various countries can provide some insight into the contribution of practitioner research to professional development of (pre-service) teachers, a knowledge gap remains regarding pre-service teacher research in bachelor's degree programmes for teacher education. Furthermore, this overview uncovered a variety of definitions and a confusion of concepts. Therefore, the next paragraphs define the essential concepts regarding pre-service teacher research in primary teacher education in the Netherlands.

When describing teacher education programmes, extant studies typically use the terms 'research' and 'inquiry' interchangeably (Munthe & Rogne, 2015). In our context, we prefer the term 'inquiry' to 'research', though the distinction between the two does not exist in Dutch. '*Inquiry* is a process of systematic, rigorous and critical reflection about professional practice, and the contexts in which it occurs, in ways that question taken-for-granted assumptions. Its purpose is to inform decision-making for action' (Reid, 2004, p. 4). Inquiry involves educators pursuing their 'wonderings', as well as using theory behind practices and exploring alternatives systematically. By contrast, the use of a variety of quantitative and qualitative research methods, scientific, international literature and peer review, as well as the construction of advancing knowledge that is applicable to other researchers, is essential to research but optional for inquiry. The ability to conduct research is a requirement at master's degree and doctoral levels (Munthe & Rogne, 2015). One of the major goals of teacher research is to contribute to the knowledge base of educational research (Hammerness, 2006; Zwart et al., 2015); therefore, the term 'inquiry' fits better with the aims of primary

teacher education. International literature about this topic though, often uses the term 'research' without giving a precise definition. Therefore, in this thesis the term 'pre-service teacher inquiry' is used for the studied Dutch context, but referring to international literature the term 'pre-service teacher research' is adopted. 'Practitioner research and inquiry' is conducted by teachers and other post-graduates, whereas 'pre-service teacher research and inquiry' is conducted by student teachers.

2.1 Purpose and value of pre-service teacher research and inquiry

The main aim of teacher education is to educate future-proof teachers who can manage groups of pupils and know what and how to teach. Ideally, these newly qualified teachers also know about learning and make decisions informed by own classroom and school evidence as well as by theory and research (Cochran-Smith & Lytle, 2009; Dana & Yendol-Hoppey, 2019). They have an *inquiry stance*, applying inquiry as a way of knowing about teaching, learning and schooling over the course of their professional life span (Cochran-Smith et al., 2009). An inquiry stance also entails being able to perform inquiry-based work; these teachers use literature or conduct practitioner research or inquiry to reflect on their own practices or those of their school organisation (Baan, Gaikhorst & Volman, 2018). *Practitioner research and inquiry* are forms of professional development that aims to understand and improve practices within the teacher's own local context, from an insider perspective (Borko, Liston & Whitcomb, 2007; Cochran-Smith et al., 2009). Practitioner research offers a range of potential outcomes, such as improving teaching practise (e.g., Ermeling, 2010; Pareja Roblin et al., 2014), increasing teachers' knowledge and understanding of students (e.g., Butler & Schnellert, 2012; Elm & Nordqvist, 2019; Jacobs, Yendol-Hoppey, & Dana, 2015) and fostering teacher empowerment and transformation (e.g., Dana & Yendol-Hoppey, 2019; Esposito & Smith, 2006). Learning how to conduct practitioner research or inquiry in teacher education can lead to inquiry-based working teachers who have critical, reflective and innovative attitudes, have a better understanding of scholastic culture, and contribute to a culture of inquiry at the school and classroom levels (Cochran-Smith & Lytle, 2009; Dobber, Akkerman, Verloop & Vermunt, 2012; Uiterwijk-Luijk, Krüger, Zijlstra & Volman, 2019). In line with prior literature (e.g., Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015), we distinguish four inquiry competences:

1. *Research knowledge*, or a broad understanding of a body of knowledge about education and research, as well as underlying theoretical concepts (e.g.,

Dana & Yendol-Hoppey, 2014; Jacobs et al., 2015; Munthe & Rogne, 2015; Sachs, 2016).

2. *Research skills*, such as conducting a literature review; formulating a research question; choosing and using research methods; collecting data by, for example, observation or interview; drawing conclusions and using scientific language (Aspfors & Eklund, 2017; Kowalczuk et al., 2019; Munthe & Rogne, 2015).

3. *Application of research* in practice, which Earl and Katz (2006) interpret as being capable of 'evidence-informed decision making' that requires not conducting research per se but rather using research literature and findings to (re)design own teaching practice (Baan et al., 2019; Kowalczuk et al., 2019). Aspfors and Eklund (2017, p. 406) call this 'research-related teaching'.

4. *An inquiry habit of mind*, originally defined by Earl and Katz (2006) as a way of thinking that values deep understanding, reserves judgements, has a tolerance for ambiguity, takes different perspectives and poses increasingly focused questions. Van der Rijst (2009), whose work is regularly cited in Dutch higher education policy, articulates six characteristics of an inquiry habit of mind: a tendency to be critical and a desire to understand, to share, to innovate, to know and to achieve.

The scientific literature has a variety of broadly similar descriptions and terms regarding the *inquiry habit of mind*, with many interpretations (e.g., Cochran-Smith & Lytle, 2009; Earl & Katz, 2006; Schön, 1986; Uiterwijk-Luijk et al., 2019). In general, the concept of the *inquiry habit of mind* is ill-defined in both literature and practice. In literature the term *inquiry as stance* is often used interchangeably with *inquiry habit of mind* (e.g., Jacobs et al., 2015; Uiterwijk-Luijk et al., 2019). However, Cochran-Smith and Lytle (2009), who introduced the concept of *inquiry as stance* as a way of looking, acting and having a habitual, continuous attitude to inquire, refer to an *inquiry habit of mind* as a part of an *inquiry stance*. When teachers take an *inquiry stance*, they act as reflective practitioners (Schön, 1986), pose questions or wonderings, use findings of previous research and scientific knowledge in their practice and share new insights from collected data (Dana & Yendol-Hoppey, 2019). An *inquiry as stance* is introduced as a counterpart to *inquiry as project*, which is shorter and finite. In this research, we

consider *inquiry as stance* similar to the disposition of inquiry-based working teachers (Baan et al., 2018; Uiterwijk-Luijk, Krüger, Zijlstra & Volman, 2017), and an *inquiry habit of mind* is a crucial component of it (Cochran-Smith & Lytle, 2009).

2.2 How to develop inquiry competences

Few studies focus on teaching pre-service teacher inquiry competences to undergraduates, compared with the volume of literature on teaching how to conduct research to graduate students (Dunn et al., 2008; Munthe & Rogne, 2015). In practice, the inquiry competences are intertwined; for example, it is not possible to apply previous research findings without using research knowledge. However, the distinction between the competences is functional with regard to teaching and learning related to pre-service teacher inquiry: Which teaching and learning activities should be implemented in the teacher education curriculum to achieve the intended learning outcomes? Previous research identifies teaching and learning activities assumed to be effective in engaging pre-service teachers in inquiry and developing inquiry competences. Regarding the competence *research knowledge*, studies suggest the following activities: reading literature and familiarizing pre-service teachers with findings of previous research (e.g., Munthe & Rogne, 2015; Ulvik & Riese, 2016), technical training in research methodology (e.g., Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; Toom et al., 2010; White et al., 2016) and teacher educators' use of research examples from practice and own research (Aspfors & Eklund, 2017; Munthe & Rogne, 2015; Toom et al., 2010; Van der Linde et al., 2012). *Research skills* can best be learned by authentic learning tasks (Van der Linde et al., 2012), practical training in research methodology (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; Toom et al., 2010; White et al., 2016) and an academic writing course (Munthe & Rogne, 2015; Rade, 2019). *Application of research* in practice can be learned by practicing with small inquiries (Munthe & Rogne, 2015; Schulz & Mandzuk, 2005) or a capstone inquiry project, ideally including collaboration between universities and schools (e.g., Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Schulz & Mandzuk, 2005; White et al., 2016). Finally, several authors describe teaching and learning activities to develop *an inquiry habit of mind*: practicing with argumentation, decision making and justification while problem solving and reflecting on the process and outcomes of research and inquiry (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; Toom et al., 2010; White et al., 2016); working in pairs or groups, as critical friends (Dobber et al., 2012; Van der Linden et al., 2012) and sharing

findings of pre-service teacher research by the organisation of formal conferences for pre-service teachers, teacher educators, teachers and school board members (Schulz & Mandzuk, 2005).

2.3 Perceived and actual learning outcomes

Most studies that report learning outcomes of pre-service teacher research and inquiry are based on self-reports collected by surveys or interviews. These data are typically perceived rather than actual learning outcomes. In general, these studies identify professional and personal development, including characteristics of an inquiry habit of mind, as important learning outcomes (e.g., Aspfors & Eklund, 2017; Niemi & Nevgi, 2014; Ulvik et al., 2017). Other studies mention learning outcomes such as research skills, such as analysing data, using a research cycle or academic writing as learning outcomes (e.g., Baan et al., 2018; Munthe & Rogne, 2015) and knowledge about research and professional knowledge on various educational topics (e.g. Gray, 2013; Kowalczuk-Walędziak et al., 2019; Munthe & Rogne, 2015). Finally, several studies mention the application of previous research to improve practice as a learning outcome (e.g. Ion & Iucu, 2016; Niemi & Nevgi, 2014).

The few findings of actual learning outcomes of pre-service teacher research relate to research knowledge (Van der Linden et al., 2015), research skills and collaboration processes (Dobber et al., 2012) and the quality of research questions in combination with how pre-service teachers conceptualise and assess learning (Cochran-Smith et al., 2009). Actual learning outcomes regarding the contribution of pre-service teacher research to student teachers' professional development, including the quality of teaching (which is assumed to be core business in teacher education programmes), are lacking. The exact relationship between pre-service teacher inquiry and teacher quality is complicated. Teacher quality and teaching quality are closely related; teaching quality is assumed to be the most important indicator for teacher quality (e.g., Darling-Hammond, 2017). Teaching quality can be measured by observation systems, which are developed to understand and improve teaching and can be used to evaluate interventions (Bell et al., 2019). These observation systems are aligned with knowledge about effective teaching (e.g., Stronge's [2018] framework for effective teaching) and focus on the following visible knowledge and behaviours: professional knowledge, skills for instructional planning (including classroom management), skills for instructional delivery (including cognitive activation, differentiation, and learning strategies), assessment for learning, creation of an adequate learning environment and professionalism.

All are connected with key characteristics reflecting teacher's dispositions, goals and beliefs that directly affect teaching effectiveness.

3 General aim and research questions

This thesis aims to gain insight into the contribution of pre-service teacher inquiry to self-reported changes in attitude, knowledge/insight, skills and expertise of pre-service teachers, along with more objective measured as well as perceived improvements in their professional practice. The curriculum model of Van den Akker (2013) formed the framework of analysis (see Figure 1.1). This model distinguishes three curriculum representations, each divided in two:

1. the *intended* curriculum, divided into *ideal curriculum*, or the vision (rationale) or basic philosophy underlying a curriculum, and *formal curriculum*, or intentions as specified in curriculum documents and/or materials;

2. the *implemented* curriculum, divided in *perceived* curriculum, as interpreted by its users (teacher educators), and *operational* curriculum, or actual process of teaching and learning,

3. the *attained* curriculum, divided in *experiential* curriculum, or learning experiences as perceived by learners (pre-service teachers), and *learned* curriculum, or actual learning outcomes.

Alignment among these three curriculum representations is important for a successful curriculum reform or improvement (Van den Akker, 2013). Therefore, analysis of this alignment regarding pre-service teacher research in the curriculum of teacher educations provides insight into the degree of success of its introduction. Moreover, to determine whether pre-service teacher inquiry would lead to better teachers, we analysed the relationships among the quality of pre-service teacher inquiry, teaching practice and perceptions of pre-service teacher inquiry.

The following four research questions guide this thesis:

1. What is the purpose and value of pre-service teacher inquiry in primary teacher education (in intended, implemented and attained curriculum)?

2. How is the development of pre-service teacher inquiry competences implemented in teacher education programmes?

3. What are the most important perceived and actual learning outcomes from pre-service teacher inquiry?

4. What are the relationships among pre-service teacher's perceptions, quality of pre-service teacher inquiry and teaching quality?

Chapters 2–5 address these four questions (see Figure 1.1).

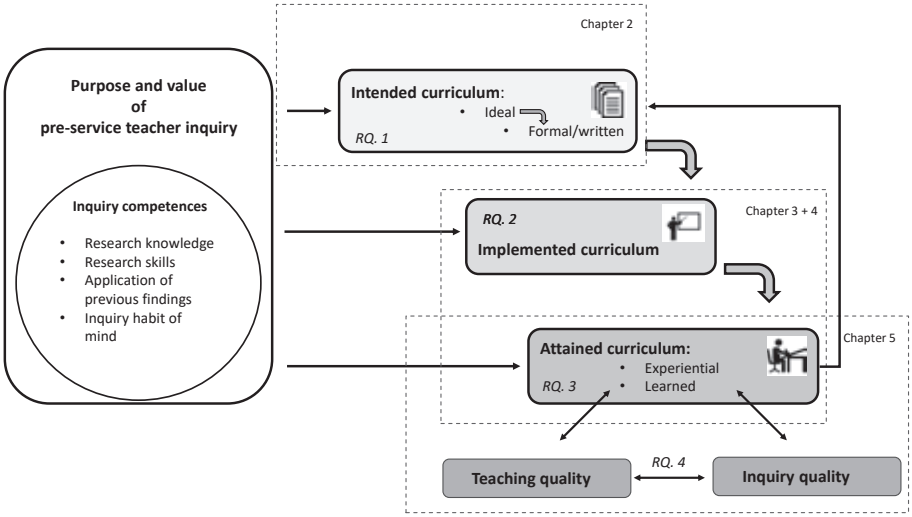

Figure 1.1 Overview of this dissertation

4 Methodological approach

In this dissertation (for an overview, see Figure 1.1), we have chosen to conduct mixed-methods research, because the research questions regarding the purpose and value of pre-service teacher inquiry in all three representations of the teacher education curriculum can be answered more in depth than with either a qualitative or quantitative research methodology alone. Combining qualitative and quantitative approaches provides a more complete understanding of the research problem than either approach alone (Creswell, 2014, 2016; Johnson & Onwuegbuzie, 2004). In a document analysis to examine the intended curriculum (Chapter 2), we used qualitative research by systematically alternating between content analysis and thematic analysis, focused on finding patterns (Bowen, 2009). In the studies described in Chapters 3 and 4, we enhanced our interpretation of the quantitative results of a survey about perceptions of pre-service teacher inquiry by asking for more detail in a qualitative study using focus groups (e.g., Why did the pre-service teachers not expect to continue practitioner inquiry in a future job?) We combined quantitative data about the quality of inquiry and the quality of teaching with qualitative data on perception of the most important learning outcomes in Chapter 5.

Table 1.1 shows the number and distribution of participants of this thesis. Nineteen Dutch institutes for primary teacher education participated in our study. This number represents more than 75% of the country's primary teacher education institutes. The data from the focus groups of both pre-service teachers and teacher educators of the eight universities of applied sciences showed saturation. We included an international comparison (the Dutch context versus an Australian context, in Chapter 4) as a response to Darling-Hammond's (2017) call for educators from various countries, with their different contexts, to learn from one another about what matters and what works to meet the high expectations of learning for pre-service teachers and their students. In total, 375 pre-service teachers and 103 teacher educators completed the survey, 36 and 55 of whom, respectively, participated in the focus groups. Finally, we collected data on teaching and inquiry quality of all graduating pre-service teachers (N = 650) of one university of applied sciences over four years (2014–2018), which gives a reliable picture of the relationship between the quality of pre-service teacher inquiry and teaching in this programme.

Table 1.1 Number and distribution of participants in the four studies.

	# Institutes	# PSTs		# TEs	
Study 1 (Chapter 2)	19 NL (out of 25 total)				
Study 2 (Chapter 3)	8 NL	30 (FG)	359 (S)	48 (FG)	98 (S)
Study 3 (Chapter 4)	2 NL	11 (FG)[a]	12 (S)[a]	19 (FG)[a]	12 (S)[a]
	2 AU	6 (FG)	16 (S)	7 (FG)	5 (S)
Study 4 (Chapter 5)	1 NL	650 (QI/QT)	236 (S)[a]		

PST= pre-service teachers, TE= teacher educators, NL= the Netherlands, AU= Australia, FG= focus group, S= survey, QI= quality of inquiry, QT= quality of teaching.

[a]Also included in Study 2

5 Outline of the thesis

This thesis follows a thesis-by-publications format. In effect, Chapters 2–5 have been published or submitted to peer-reviewed journals and can thus be read independently. As a result, some recurrence and overlap across chapters is inevitable. This first chapter is devoted to introducing the subject and the aims. Figure 1.1 (p. 18) shows an overview of Chapters 2–5, with a reference to the associated research questions and an illustration of the interdependence. The second chapter focuses on the purpose and value of pre-service teacher inquiry in the *intended curriculum* of primary teacher education in the Netherlands. We conducted a document analysis to investigate and compare the described aims in policy documents and the description of pre-service teacher research and inquiry activities in the Dutch teacher education curricula. From the findings, we formulated a definition of *an inquiry stance* (in Dutch, *Onderzoekend vermogen*) with six intertwined aspects. This chapter has been published in *Pedagogische Studiën*, a Dutch peer-reviewed journal. It has been written in Dutch, to ensure the readability for Dutch teacher educators and teachers in an effort to raise its practical value. It comes with an abstract in English.

Chapter 3 examines the *implemented* and *attained* curriculum in eight Dutch institutes for teacher education primary schools. We used a survey and organised focus groups with pre-service teachers and teacher educators to study their perceptions of pre-service teacher inquiry. This study sheds light on the implemented curriculum and a part of the attained curriculum, the experiential component.

For Chapter 4, we used a similar methodology to that in Chapter 3. This time we collected data on the *implemented* and *attained* curricula from two institutes for teacher education in Melbourne, Australia. We aimed to gain deeper insight into

the role of pre-service teacher inquiry by mapping the perceptions of pre-service teachers and teacher educators in two country contexts. We examined pre-service teacher research and inquiry in the Australian programme descriptions, attended and cooperated in workshops about research, asked pre-service teachers and teacher educators to complete the questionnaire about perceptions of pre-service teacher research, held interviews and organised focus groups. We compared these data with similar data from the Netherlands.

Chapter 5 presents our final study, in which we related perceptions of pre-service teacher inquiry to the quality of the final inquiry projects and the pre-service teaching quality. To do so, we offered the questionnaire about perceptions of pre-service teacher inquiry to all graduating pre-service teachers of one university of applied sciences for four years. We observed 80 pre-service teachers with the International Comparative Analysis of learning and Teaching (ICALT) instrument to determine the teaching quality and compared these findings with the assessment scores regarding teaching. We examined the relationship between the scores on the inquiry project and the assessment scores of teaching and determined four profiles with a cluster analysis.

The final chapter (Chapter 6) contains the main findings, general conclusions and a critical discussion of this dissertation, with attention to the scientific contribution, limitations and directions for future research. A discussion of implications for practice regarding pre-service research and inquiry, and development of an inquiry stance conclude this thesis.

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CHAPTER 2

Development of an inquiry stance in the intended curriculum of primary teacher education

This chapter shows findings from a document analysis about descriptions of pre-service teacher inquiry in the ideal and formal curriculum of Dutch institutes for primary teacher education. This analysis results in a definition for an inquiry stance in this context and insights in the degree of constructive alignment regarding pre-service teacher inquiry among the participating institutes. This chapter is written and published in Dutch to stimulate dissemination in the context it concerns. The abstract in English contains the main idea and most important findings of the study.

This chapter is based on: Van Katwijk, L., Jansen, E., & Van Veen, K. (2019). Ontwikkeling van kritische en nieuwsgierige leraren? Onderzoekend vermogen in leerlijnen onderzoek van lerarenopleidingen basisonderwijs. *Pedagogische studiën*, (96) 330-348

Abstract

This document analysis is focused on the development of practitioner inquiry competences in teacher education programmes for primary education in 19 different universities of applied sciences in the Netherlands. First, the intended purpose of pre-service teacher inquiry is studied. This provided six different aspects for the development of practitioner inquiry competences. In the second phase, the study was focused on how these aspects were operationalized in the described programmes. Results show that research skills have been extensively described in all study programmes in terms of intended learning outcomes, teaching and learning activities, and assessment. Research knowledge and application of research results are integrated in conducting research. Although the inquiry habit of mind is found most important in the rationale, the implementation rarely meets the principle of constructive alignment. Neither does the attention to inquiry stance in educational practice.

1 Inleiding

Als gevolg van de Europese Bolognaverklaring uit 1999 en daaruit volgend de invoering van de bachelor-masterstructuur (BaMa), is binnen het hoger beroepsonderwijs (hbo) steeds meer aandacht gekomen voor onderzoek. Op hogescholen, die sindsdien internationaal 'Universities of Applied Sciences' genoemd worden (Kyvik & Skodvin, 2003), is een cultuuromslag aan de gang van een pure onderwijsinstelling naar een combinatie van onderwijs en praktijkgericht onderzoek. Dit betekent dat de opleidingen onderzoeksactiviteiten voor studenten zijn gaan implementeren in hun curricula, wat niet eenvoudig blijkt te zijn (Verburgh & Elen, 2013). De HBO-raad[1] (2009) stelt dat het hbo op basis van de Dublindescriptoren de ambitie heeft om professionals af te leveren met een 'onderzoekend vermogen'. Wat het 'onderzoekend vermogen' precies inhoudt wordt zelden helder gedefinieerd en is nauwelijks wetenschappelijk onderbouwd. Toch wordt het in de meeste visie- en beleidsdocumenten van de opleidingen genoemd.

Alle lerarenopleidingen op hbo-niveau hebben sindsdien een vorm van studentonderzoek opgenomen in de curricula. Op basis van ervaringen in universitaire lerarenopleidingen en praktijkonderzoek in scholen, is de aanname hierachter dat leraren in staat zouden moeten zijn om onderzoek te gebruiken en te doen ter verbetering van hun manier van lesgeven en ter verhoging van de kwaliteit van onderwijs (Mathijsen, Joosten-ten Brinke, Kools, Bolhuis, & Krol, 2012; Zeichner, 2003). Dit sluit aan bij internationale ontwikkelingen bij lerarenopleidingen, waarbij het leren doen van onderzoek gezien wordt als dé manier om aan uitdagingen van de 21ste-eeuw te kunnen voldoen en onderwijskwaliteit te verhogen (Aspfors & Eklund, 2017; Flores, 2018; Hökkä & Eteläpelto, 2014; Menter, Peters, & Cowie, 2017). De keuzes waartoe en hoe dit onderzoek in de opleiding wordt ingezet en ontwikkeld verschilt per land, zoals Munthe en Rogne (2015) aantonen in hun review studie over studentonderzoek bij lerarenopleidingen in Finland, Noorwegen, de Verenigde Staten en Schotland. Geen van de opleidingen beoogt onderzoekers op te leiden. De algemene aanname is dat studentonderzoek in de lerarenopleiding leidt tot betere leraren (e.g., Aspfors & Eklund, 2017; Baan, Gaikhorst, van't Noordende, & Volman, 2019; Cochran-Smith, Barnatt, Friedman, & Pine, 2009; Toom et al., 2010). Dit onderzoek over studentonderzoek in lerarenopleidingen richt zich voornamelijk op masterniveau; over studentonderzoek op bachelor niveau is minder bekend (Van Katwijk, Berry, Jansen, & Van Veen., 2019a; Dunn, Harrison & Coombe, 2008; Reis-Jorge, 2007). Waar nog nauwelijks zicht op is, is wat Nederlandse opleidingen leraar basisonderwijs beogen met studentonderzoek, de ontwikkeling van onder-

zoekend vermogen, en hoe dit wordt vormgegeven in het curriculum. Van der Linden et al. (2012, 2015) hebben als enigen in Nederland hier onderzoek naar gedaan met studies over design-principes met betrekking tot het aanleren van het doen en gebruiken van onderzoek door pabostudenten. Om meer zicht te krijgen op de meerwaarde van het doen van onderzoek door studenten voor hun kwaliteit als leraar, is eerst inzicht in het doel en de wijze waarop opleidingen dit hebben georganiseerd zinvol.

Als analysekader voor deze studie hebben we gebruik gemaakt van de curriculummodellen van Van den Akker (2003) en Biggs & Tang (2011). Van den Akker (2003) onderscheidt binnen het beoogd curriculum twee niveaus: het denkbeeldig en het geschreven curriculum, waarbij het denkbeeldig curriculum betrekking heeft op de visie/rationale en het geschreven curriculum op de formele, beschreven leerlijn. Binnen het geschreven curriculum is geanalyseerd in hoeverre er sprake is van *constructive alignment* met betrekking tot doelen van studentonderzoek en onderzoekend vermogen. Dit wil zeggen dat beoogde leeruitkomsten, onderwijsactiviteiten en toetsing op één lijn staan, wat onmisbaar is om de studenten die leeruitkomsten te laten bereiken (Biggs & Tang, 2011). Deze studie heeft als doel inzicht te krijgen in de doelen van studentonderzoek en de operationalisering hiervan in het beoogd curriculum van lerarenopleidingen basisonderwijs in Nederland (Van den Akker, 2003). Hiermee levert het een bijdrage aan een theoretische en empirische invulling van het begrip 'onderzoekend vermogen' voor lerarenopleidingen basisonderwijs.

2 Theoretisch kader

2.1 Studentonderzoek in de opleiding voor leraar basisonderwijs (pabo)

Net als vrijwel alle andere hbo-opleidingen, besteden ook de pabo's steeds meer aandacht aan studentonderzoek in hun curricula (Griffioen, 2018). Enerzijds is dit een logisch gevolg van de internationale afspraken, waarbij tijdens de laatste accreditatieronde van de NVAO ook nog de focus kwam te liggen op de eindonderzoeken. Anderzijds grijpen opleidingen de aandacht voor onderzoek aan om een kwaliteitsverbetering van het onderwijs te bewerkstelligen. In dit artikel richten wij ons niet op 'praktijkgericht onderzoek', wat als doel heeft om generaliseerbare kennis op te leveren voor de onderzoekspraktijk. We richten ons, analoog aan de indeling van de Vereniging Hogescholen (2015) en Ros, Bakx en Den Brok (2018) alleen op 'praktijkonderzoek', dat verbetering van het eigen onderwijs

als doel heeft en betrekking heeft op leraren en leraren in opleiding. Internationaal komt dit overeen met *practitioner research or inquiry* (zie bijvoorbeeld Borko, Liston, & Whitcomb, 2007; Cochran-Smith et al., 2009; Zeichner & Noffke, 2001).

Bolhuis (2012) stelt dat door het inzetten van praktijkonderzoek als professionele leerstrategie, studenten, leraren en opleiders bewuster omgaan met het stellen en behalen van doelen en aangezet worden om hun handelen te onderbouwen met al dan niet wetenschappelijke kennis van anderen. Van Veen, Zwart, Meirink, & Verloop (2010) concluderen op basis van een reviewstudie dat zelf actief en onderzoekend leren, gericht op problemen met betrekking tot de vakinhoud, vakdidactiek en het leerproces van leerlingen in een specifiek vak, als onderdeel van een professionele leerstrategie, bij kan dragen aan de verhoging pedagogisch didactische vaardigheden. Dobber, Akkerman, Verloop en Vermunt (2012) stellen dat praktijkonderzoek in een lerarenopleiding tot doel heeft om studenten een kritisch-reflectieve houding aan te leren, in staat te stellen om een schoolcultuur te doorgronden, instructievormen aan te passen aan leerbehoeften van kinderen, nieuwe methodes te ontwikkelen en te participeren in professionele leergemeenschappen. Hierbij wordt analoog aan Cochran-Smith en Lytle (1999, 2009) onderscheid gemaakt tussen *inquiry as project*, wat per definitie kortdurend en resultaatgericht is, en *inquiry as stance,* waarbij een onderzoekende houding bijdraagt aan een continue ontwikkeling van onderzoekend handelen in de onderwijspraktijk.

Praktijkonderzoek leren doen op de pabo kan ook als doel hebben dat de leraren in de toekomst zelfstandig onderzoek kunnen en gaan verrichten (Baan et al., 2019; Griffioen, 2018). In een reviewstudie naar de aard en betekenis van onderzoek door docenten van Zwart, Smit en Admiraal (2015) staan drie typen doelen voor docentonderzoek beschreven: 1. Onderwijsinnovatie, gericht op het veranderen en verbeteren van de eigen onderwijs- en schoolpraktijk, 2. Het bijdragen aan de kennisbasis over onderwijs en 3. Professionele ontwikkeling. Uit de genoemde studie blijkt dat ook docentonderzoek, dat na de opleiding wordt uitgevoerd, meestal gericht is op directe verbetering en vernieuwing van de onderwijspraktijk of de eigen professionalisering en daarmee bijdraagt aan een leven lang leren, maar zelden bijdraagt aan het genereren van nieuwe kennis over onderwijs (Zwart et al., 2015).

2.2 Onderzoekend vermogen in de pabo

Hoewel het begrip 'onderzoekend vermogen' nauwelijks echt gedefineerd wordt, wordt de term in nationale beleidsstukken (bijvoorbeeld Onderwijsraad, 2014; Stuurgroep OPPO, 2018; Vereniging Hogescholen, 2015) en visiestukken van

hogescholen veelvuldig gebruikt met verwijzing naar de drie aspecten die Andriessen (2014) onderscheiden heeft: onderzoekende houding, onderzoek gebruiken en onderzoek doen. Deze aspecten zijn ook terug te vinden in internationale literatuur over de ontwikkeling van de onderzoekscompetentie bij aanstaande leraren, waarbij het aspect 'onderzoek doen' geïnterpreteerd wordt als onderzoeksvaardigheden (bijvoorbeeld Aspfors & Eklund, 2017; Baan et al., 2019; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015; Toom et al., 2010). Hiernaast wordt in de literatuur nog een ander element benoemd, namelijk onderzoekskennis, waardoor wij in totaal op vier aspecten van onderzoekend vermogen in de pabo uitkomen:

1. *Onderzoeksvaardigheden*, zoals het analyseren van praktijkproblemen, een literatuurstudie uitvoeren, een onderzoeksvraag opstellen, het kiezen en gebruik maken van adequate onderzoeksmethoden, het verzamelen en analyseren van data, het trekken van conclusies en het schrijven van een onderzoeksverslag (Aspfors & Eklund, 2017; BERA-RSA, 2014; Hökkä & Eteläpelto, 2014; Munthe & Rogne, 2015).

2. *Onderzoekende houding*, door Van der Rijst (2009) gekarakteriseerd als willen weten, willen begrijpen, willen vernieuwen, willen bereiken, willen delen en kritisch zijn. Cochran-Smith en Lytle (2009) gebruiken voor deze houding de term *inquiry as stance*, waarbij zowel het open staan om te leren van de eigen professionele omgeving als een kritische grondhouding van belang zijn. Een andere verwante term aan het begrip onderzoekende houding is *inquiry habit of mind* (Earl & Katz, 2006). Volgens Earl en Katz is dit een manier van denken die gericht is op diepgaand begrijpen, terughoudend zijn in concluderen, tolerant zijn ten aanzien van tegenstrijdigheden, vanuit verschillende perspectieven willen kijken en continu vragen willen stellen**.** Een onderzoekende houding vormt ook de basis van onderzoekend handelen als reflectieve beroepsbeoefenaar (Schön, 1983).

3. *Onderzoekskennis*, waarbij het zowel gaat om begrip van het vakgebied, alsook om theoretische concepten over het fenomeen onderzoek zelf en over het uitvoeren van onderzoek (Aspfors & Eklund, 2017; BERA-RSA, 2014; Dana & Yendol-Hoppey, 2019; Jacobs et al., 2015; Munthe & Rogne, 2015; Sachs, 2016).

4. *Toepassing van onderzoeksresultaten* van anderen in de praktijk. Earl &Katz (2006) hebben het in deze zin over het in staat zijn tot *evidence informed decision making*, waarbij het niet direct hoeft te gaan om het zelf uitvoeren van een onderzoek, maar wel om het gebruik maken van data uit de praktijk en uit eerder verschenen onderzoek (Imants, Van Veen, Pelzer, Nijveldt, & Van der Steen, 2010; Schildkamp & Kuiper, 2010).

Deze vier aspecten zijn sterk aan elkaar gerelateerd en niet los van elkaar te zien in de onderwijspraktijk; het is bijvoorbeeld niet mogelijk om onderzoeksvaardigheden te gebruiken zonder een vorm van onderzoekskennis. Voor analyse van de ontwikkeling van onderzoekend vermogen bij studenten in de lerarenopleiding is het echter nuttig om deze aspecten afzonderlijk van elkaar te onderscheiden.

Op grond van bovenstaande aspecten definiëren wij het onderzoekend vermogen voor de pabo als de bekwaamheid om onderzoek te doen én te gebruiken ter verbetering van de eigen beroepspraktijk door de integratie van onderzoeksvaardigheden, een onderzoekende houding, onderzoekskennis, en het kunnen toepassen van onderzoeksresultaten in de praktijk.

2.3 Onderzoeksvragen

De volgende deelvragen staan centraal:

1. Wat beogen lerarenopleidingen voor basisonderwijs (pabo's) in Nederland met studentonderzoek en ontwikkeling van onderzoekend vermogen in het curriculum?

2. Hoe wordt studentonderzoek en ontwikkeling van onderzoekend vermogen door pabo's geoperationaliseerd in de beschreven leerlijnen?

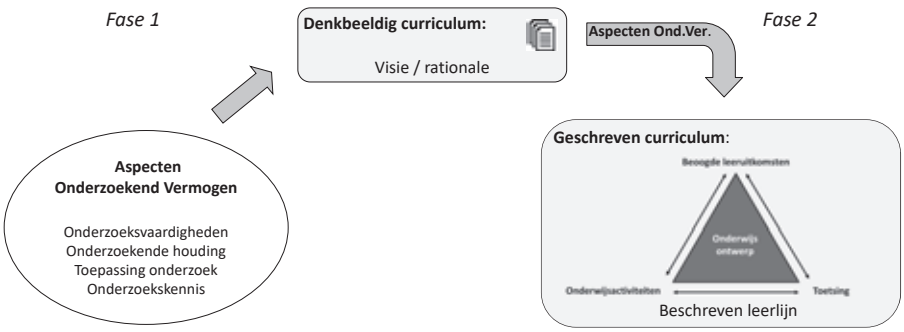
3. In hoeverre is er sprake van *constructive alignment* tussen de beschrijvingen van de onderwijsactiviteiten en de toetsing met betrekking tot onderzoekend vermogen en de beoogde leeruitkomsten in leerlijnen onderzoek?

3 Methode

In deze kwalitatieve studie hebben we gekozen voor een documentanalyse zoals beschreven door Bowen (2009) met een systematische afwisseling tussen inhoudsanalyse, gericht op de concepten uit de onderzoeksvragen, en thematische analyse, gericht op het vinden van patronen. De studie is gefocust, in termen van Van den Akker (2003) op het beoogd curriculum, uitgesplitst in het denkbeeldig en het geschreven curriculum, dat beschreven staat in beleidsstukken, curricula -en programmabeschrijvingen.

3.1 Onderzoeksontwerp

Dit onderzoek is uitgevoerd in twee fases (zie onderzoeksontwerp, Figuur 2.1). In fase 1 hebben we, het denkbeeldig curriculum uit de documenten van de participerende pabo's onderzocht op doelstellingen ten aanzien van studentonderzoek en onderzoekend vermogen, en geanalyseerd met behulp van de vier aspecten van onderzoekend vermogen uit het theoretisch kader. In fase 2 hebben we de doelstellingen met betrekking tot studentonderzoek en onderzoekend vermogen uit het denkbeeldig curriculum vergeleken met de operationalisering ervan in de beschreven leerlijn - onderzoeksvraag 2 (Van den Akker, 2003) .



Figuur 2.1 Onderzoeksontwerp in twee fasen.

Binnen de beschreven leerlijnen hebben wij vervolgens geanalyseerd of de beoogde leeruitkomsten, onderwijsactiviteiten en toetsing consistent verwoord zijn, en voldoen aan het principe van *constructive alignment* – onderzoeksvraag 3 (Biggs & Tang, 2011). Hierbij wordt gesteld dat leren *constructief* is; het is het opbouwen van

kennis en vaardigheden, voortbouwend op eerdere ervaringen en kennis. *Alignment* betreft het bewust afstemmen van de beoogde leeruitkomsten met de geplande activiteiten en toetsing, zodat het gestelde doel ook daadwerkelijk kan worden bereikt: de geplande activiteiten en toetsing dragen dus expliciet bij aan het bereiken van de gestelde doelen.

3.2 Dataverzameling

Alle 25 reguliere opleidingen voor leraar basisonderwijs (pabo), met een bachelor van vier jaar, zijn benaderd om mee te doen aan dit onderzoek. Hiervan hebben 19 opleidingen hun documenten ter beschikking gesteld. Drie pabo's hebben aangegeven op het moment van dataverzameling, najaar 2015/voorjaar 2016, niet mee te kunnen doen, omdat de leerlijn onderzoek op dat moment in ontwikkeling was. Drie opleidingen gaven geen reden aan om niet mee te doen aan dit onderzoek. Omdat studentonderzoek in het hbo -en op pabo's in het bijzonder- pas sinds de nota "Kwaliteit als opdracht" (HBO-raad, 2009) een plek is gaan krijgen, hebben alle opleidingen een beleids -en curriculumverandering doorgevoerd en dit in verschillende documenten verantwoord. Van 17 opleidingen hebben wij visie/beleidsdocumenten ontvangen, die expliciet gericht waren op onderzoek in de opleiding. Twee opleidingen hadden hun visie op studentonderzoek geïntegreerd in hun opleidingsplan. De bestudeerde visiestukken zijn in sommige gevallen geschreven ten behoeve van de accreditatie, soms als werkdocument van een curriculumontwikkelgroep en enkele als achtergrondinformatie bij programmabeschrijvingen voor opleiders en studenten. Hiernaast hebben alle participerende opleidingen documenten aangeleverd met daarin programmabeschrijvingen en beoordelingsmodellen van onderdelen met betrekking tot praktijkonderzoek in het curriculum (beschreven leerlijn).

3.3 Data-analyse

Eerst zijn alle verkregen documenten van de 19 pabo's globaal doorgenomen. Er werd een selectie gemaakt van tekstfragmenten in de documenten die betrekking hadden op de eerste onderzoeksvraag over wat opleidingen beogen ten aanzien van onderzoekend vermogen in het curriculum. Hierbij is onderscheid gemaakt tussen het *denkbeeldig curriculum*, ofwel de visie/rationale voor fase 1, en het *geschreven curriculum*; de beschreven leerlijn, die in fase 2 centraal stond. In het *denkbeeldig curriculum* wordt de vraag beantwoord: 'Waartoe wordt de ontwikkeling van onderzoekend vermogen in de opleiding aangeboden?'. Het *geschreven curriculum* gaat over de vraag: 'Waarheen wordt geleerd met betrekking tot ontwikkeling van

het onderzoekend vermogen?' (Van den Akker, 2003). Dit laatste betreft beoogde leeruitkomsten, die terugkomen in de leerlijn onderzoek. Welke tekstfragmenten tot *het denkbeeldig curriculum* behoren en welke tot het *geschreven curriculum* is vastgesteld door de eerste auteur en een onderzoeker, die niet bij dit project betrokken was. De interbeoordelaars overeenkomst hierbij was 92% (Miles, Huberman, & Saldana, 2014). Over de verschillen werd vervolgens in een gesprek consensus bereikt.

In fase 1 van het onderzoek bestond de analyse uit vier stappen:

1. De tekstfragmenten, behorend bij het *denkbeeldig curriculum* zijn open gecodeerd in ALTLAS.ti aan de hand van de eerste onderzoeksvraag, waarbij de vier aspecten van onderzoekend vermogen gebruikt zijn als *sensitizing concepts*, oftewel richtinggevende begrippen voor het benaderen van de empirische data (Bowen, 2006).

2. Vervolgens is in een thematische analyse vastgesteld welke categorieën te onderscheiden zijn met betrekking tot de rationale achter de ontwikkeling van onderzoekend vermogen (Miles et al., 2014). Bij deze codering zijn tijdens het proces, op basis van de beschrijvingen in de documenten, in aanvulling op de al beschreven vier aspecten nog twee nieuwe aspecten gevonden.

3. Deze in totaal zes aspecten van onderzoekend vermogen zijn voorgelegd aan en bediscussieerd met een team van onderzoekers en lerarenopleiders. De betekenis van het nieuwe aspect 'onderzoekend handelen', is hierbij bijvoorbeeld verder uitgediept. Aanvankelijk benaderden we dit meer vanuit de theorie over '*reflection-in-action and reflection-on-action*' (Schön, 1983), maar besloten toch dichter bij concrete zinsneden uit de documenten te blijven. We kwamen zo tot een tweeledige betekenis: het gaat bij onderzoekend handelen om zichtbaar gedrag in de onderwijspraktijk waarin zowel onderzoekskennis als een onderzoekende houding weerspiegeld is. Op grond van de uitkomsten uit deze discussie is de formulering van de aspecten aangescherpt en is de codeboom vastgesteld (zie tabel 2.1).

4. In de laatste stap van de eerste fase is met behulp van ATLAS.ti een thematische analyse uitgevoerd om verschillen tussen opleidingen, met betrekking tot de uitgangspunten ten aanzien van aspecten van onder-

zoekend vermogen, helder te krijgen (Bowen, 2009; Friese, 2014). De interpretatie hiervan is gedaan door de oorspronkelijke teksten opnieuw te bestuderen (inhoudelijke analyse). Aspecten zijn als 'belangrijk (++)' aangemerkt als dit letterlijk in de tekst stond of duidelijk als eerste, dan wel enige, genoemd werd. Aspecten die één of enkele keren genoemd werden kregen een '+' en aspecten die niet voorkwamen een '-'. Deze resultaten zijn weergegeven in een tabel.

Fase 2 van het onderzoek was gericht op het geschreven curriculum en is uitgevoerd aan de hand van documenten waarin onderwijsactiviteiten dan wel beoordelingsrubrics met betrekking tot onderzoek beschreven stonden. De analyse was deductief, waarbij de codeboom uit de eerste fase is gebruikt, en bestond uit 4 stappen:

1. De beoogde leeruitkomsten, onderwijsactiviteiten en toetsing uit het *geschreven curriculum* zijn ingedeeld in categorieën met de zes aspecten van onderzoekend vermogen uit fase 1 als sensitizing concepts, en in een iteratief proces gecodeerd. Deze categorieën zijn aangevuld met codes waarin concrete inhoudelijke deelaspecten met betrekking tot de operationalisering uit de teksten verwoord zijn, bijvoorbeeld de code 'APA toepassen' onder het aspect 'onderzoeksvaardigheden'.

2. Per opleiding hebben we een inhoudelijke analyse uitgevoerd met betrekking tot de operationalisering van de zes aspecten, waarbij we ons gericht hebben op de formulering van de aspecten in de beoogde leeruitkomsten, de onderwijsactiviteiten en de toetsing.

3. Hierna zijn thematische analyses uitgevoerd, waarbij gekeken is naar operationalisering van de (deel)aspecten van onderzoekend vermogen en de plaats ervan in de leerlijn bij de verschillende pabo's (deelvraag 2). Hierbij is zowel gelet op de aan- of afwezigheid, alsook op het gewicht dat opleidingen aan verschillende deelaspecten toekennen. Dit laatste werd afgelezen aan de formulering en plaats, maar ook de frequentie waarmee de verschillende (deel)aspecten genoemd werden in de beschreven leerlijnen. De verdeling van (deel)aspecten, die terug te vinden zijn in de onderwijsactiviteiten en in de toetsing bij verschillende opleidingen, hebben we in tabellen weergegeven. Door de grote overeenkomsten tussen

opleidingen in onderwijsactiviteiten, hebben we in één tabel weergegeven hoe de verdeling van verschillende activiteiten bij alle opleidingen over de vier leerjaren verdeeld is (Tabel 2.3). Leeractiviteiten waar veel aandacht aan besteed werd in een leerjaar bij vrijwel alle opleidingen kregen '++', leeractiviteiten die bij een aantal opleidingen genoemd werden kregen '+' en onderdelen die in een bepaald leerjaar niet als leeractiviteit werden beschreven kregen '-'.

4. Tot slot is per aspect gezocht naar *constructive alignment* binnen opleidingen. Als bij een aspect in de doelstellingen, onderwijsactiviteiten én toetsing inhoudelijk aan dezelfde deelaspecten aandacht werd geschonken benoemden we het *aligned* (++). Als niet dezelfde deelaspecten werden benoemd, maar een aspect wel in doelstellingen, onderwijsactiviteiten en toetsing terug te vinden was, of niet op iedere plek met hetzelfde gewicht, benoemden we het gedeeltelijk *aligned* (+). Als een aspect in één of twee elementen van *constructive alignment* ontbrak, benoemden we het als niet-*aligned* (0). Als een aspect binnen een opleiding nergens voorkwam, benoemden we het aspect als afwezig (-). Voor een totaalbeeld hebben we deze resultaten van de verschillende opleidingen in één tabel weergegeven.

Om de kwaliteit van de analyses te borgen en de interne validiteit te verhogen, zijn de stappen in nauw overleg tussen de onderzoekers uitgevoerd: De codeboom is in consensus tussen de onderzoekers vastgesteld. Daarna heeft de eerste auteur de overige codering en analyses uitgevoerd, met tussentijdse terugkoppeling naar de andere onderzoekers. Cruciale keuzes, zoals de verschillende schaalverdelingen, werden gezamenlijk gemaakt. Waar verschil van inzicht tussen de mede-onderzoekers naar voren kwam, werd gediscussieerd en consensus bereikt. Ook heeft een onafhankelijke onderzoeker tekstfragmenten behorend bij het geschreven curriculum gecodeerd, wat een ruim voldoende intercodeurs overeenkomst opleverde van 86% (Miles et al., 2014).

4 Resultaten

4.1 Doelen onderzoekend vermogen in beoogd curriculum

Voor het beantwoorden van de eerste onderzoeksvraag naar wat pabo's beogen met studentonderzoek en de ontwikkeling van onderzoekend vermogen in het curriculum, hebben we analoog aan Van den Akker (2003) twee niveaus onderscheiden: algemene doelen van *het denkbeeldig curriculum*, die overeenkomen met of in het verlengde liggen van de opleidingsdoelen, en specifiekere doelen, of beoogde leeruitkomsten, zoals verwoord in *het geschreven curriculum* gericht op kennis, houding en vaardigheden van studenten. De mate van uitwerking van het denkbeeldig curriculum over onderzoekend vermogen verschilt per opleiding. Zeventien van de 19 deelnemende opleidingen hebben een visiedocument dat specifiek over onderzoek in de opleiding gaat. Inhoudelijk vertonen de documenten grote overeenkomsten. In het denkbeeldig curriculum benoemen alle opleidingen als algemeen doel van onderzoek in de opleiding verbetering en/of innovatie van de beroepspraktijk. Alle opleidingen, op één na, vermelden als doel de professionele ontwikkeling van studenten tot startende leraar basisonderwijs. Ook noemt twee derde van de opleidingen kennisontwikkeling als doel van onderzoek door studenten. De term 'onderzoekend vermogen' wordt door 10 van de 19 pabo's gebruikt bij de beschrijvingen van de uitgangspunten en doelstellingen met betrekking tot onderzoek (denkbeeldig curriculum), waarbij twee opleidingen expliciet naar de drie aspecten van Andriessen (2014) verwijzen. Zowel in het denkbeeldige als in het geschreven curriculum van alle pabo's wordt *onderzoekskennis* gesplitst in: inhoudelijke *kennis over uitkomsten van eerder onderzoek naar (een specifiek deel van) het vakgebied* én *kennis over het fenomeen onderzoek*. Dit laatste behelst de kennis over methoden en technieken bij het doen van onderzoek. In het denkbeeldig curriculum wordt nog een nieuw aspect genoemd, namelijk: *onderzoekend handelen in de onderwijspraktijk*. Hierbij gaat het niet om onderzoek doen zelf, maar om concrete, waarneembare uitingen van een onderzoekende houding en onderzoekskennis in de praktijk zoals bijvoorbeeld het willen weten en op een systematische manier uitzoeken waarom een leerling anders presteert dan verwacht, of bijvoorbeeld een beargumenteerd kritisch geluid laten horen bij implementatie van onderwijsbeleid in de school.

In totaal komen we hiermee op zes aspecten van *onderzoekend vermogen* in het beoogd curriculum (zie Tabel 2.1).

Tabel 2.1 De zes aspecten van onderzoekend vermogen met gehanteerde definities en concrete voorbeelden uit de bestudeerde documenten

Aspecten onderzoekend vermogen	Definitie	Voorbeelden uit bestudeerde documenten
Onderzoeks-vaardigheden (V)	Vaardigheden die nodig zijn om een onderzoek uit te voeren.	"Om deze uitdagingen het hoofd te kunnen bieden is […] vaardigheid in onderzoek doen noodzakelijk voor leraren." [I – 17:101] "Het doel daarvan is dat je enerzijds leert hoe je een goed onderzoek opzet en uitvoert." [L – 1:22]
Onderzoekende houding (H)	Een open en kritische manier van kijken, gericht op dieper inzicht.	"De onderzoekende houding kent verschillende kijkrichtingen. […] Het gaat hierbij om reflectie, studieloopbaanbegeleiding, eigen normen en waarden (normatieve professionalisering). […] De laatste kijkrichting is onderzoekend kijken naar de opvattingen van anderen om zo eigen opvattingen te funderen." [R – 50:4] "Het ontwikkelen van een onderzoekende houding staat hierbij niet voor niets bovenaan. Die houding staat centraal binnen het lerarenberoep en is de motor tot de wens om te onderzoeken." [W – 5:57]
Onderzoekend handelen (H/V)	Gedrag dat zichtbaar is in de praktijk, waarin zowel onderzoekskennis als een onderzoekende houding weerspiegeld is.	"Daarbij zijn het analyseren van toets resultaten, observeren van leerlingen en samenwerken met collega's belangrijke kernkwaliteiten. Een leerkracht moet in staat zijn om op systematische wijze de leeropbrengsten van leerlingen in kaart te brengen en het onderwijs aan te passen aan de behoeften en capaciteiten van leerlingen." [A – 25:49] "Hoe kan ik een probleem in mijn werksituatie onderzoeken en oplossen door anders te gaan handelen? Het eigen handelen staat centraal." [J – 13:35]
Toepassing onderzoeks-resultaten in praktijk (V)	Het gebruik maken of uittesten van resultaten uit eerder onderzoek in de eigen lespraktijk.	"Studenten baseren hun professioneel handelen op resultaten van onderzoek (en andere actuele kennis..)" [S – 80:9] Het doel van het onderzoekslint is het verwerven van 'onderzoekend vermogen', met als componenten de kritisch-onderzoekende houding, toepassen van onderzoeksresultaten en zelf onderzoek doen." [K – 29:5]
Kennis over het fenomeen onderzoek (K)	Kennis over het doen van onderzoek en achterliggende theorieën.	"Om te groeien als leraar - onderzoeker is uiteraard kennis over het doen van onderzoek nodig." [I -17:107] "Het 12-stappenplan biedt houvast om praktijkonderzoek te verrichten in stage of werksituatie." [Y – 44:16]
Kennis over onderzoek uit het vakgebied (K)	Kennis over concepten, theorieën en eerder verworven kennis over het te onderzoeken onderwerp.	Een onderzoekende leraar gaat (samen met anderen) systematisch op zoek naar kennis om zo meer inzicht te krijgen in de problematiek die hij of zij in de eigen klas of schoolorganisatie tegenkomt. [A – 25:39] De student werkt aan de volgende leeruitkomsten: […] het vergelijken van bestudeerde theorieën en het vormen en onderbouwen van een eigen opinie daarover; [X – 35:12]

V=vaardigheidsaspect, H= houdingsaspect en K= kennisaspect

In het geschreven curriculum verwoorden alle 19 opleidingen beoogde leeruitkomsten gericht op kennis, houding en vaardigheden van studenten ten aanzien van praktijkonderzoek. De ontwikkeling van de *onderzoeksvaardigheden*, *onderzoekende houding*, en *het kunnen toepassen van onderzoeksresultaten in de praktijk*, wordt hierbij door vrijwel alle opleidingen genoemd. *Kennis over het fenomeen onderzoek*, *kennis over onderzoek uit het vakgebied* en *onderzoekend handelen* wordt in vrijwel alle beschrijvingen van beoogde leeruitkomsten genoemd.

Vervolgens zijn de doelstellingen in het geschreven curriculum van de 19 opleidingen met elkaar vergeleken op basis van deze zes aspecten van onderzoekend vermogen (zie Tabel 2.2). Hierbij is onderscheid gemaakt tussen wat opleidingen als belangrijkste aspect(en) zien (++), wat als overige aspecten (+) en in welke documenten het aspect niet genoemd wordt (-).

Tabel 2.2 Aspecten van onderzoekend vermogen in de doelstellingen van verschillende opleidingen

	Opleiding																		
Aspecten	**B**	**J**	**N**	**O**	**Q**	**X**	**H**	**I**	**S**	**P**	**W**	**A**	**D**	**K**	**L**	**R**	**Y**	**C**	**U**
Onderzoeks-vaardigheden	++	++	++	++	++	++	++	++	++	++	+	+	+	+	+	-	+	++	+
Onderzoekende houding	+	-	+	+	-	+	++	++	++	++	++	++	++	++	++	++	++	+	-
Onderzoekend handelen	-	+	+	+	-	-	+	+	+	+	+	+	+	+	-	-	+	++	-
Toepassing onderzoek in praktijk	+	+	+	+	+	+	+	+	+	++	+	+	+	+	+	-	+	++	+
Kennis fenomeen onderzoek	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Kennis onderzoek vakgebied	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	++

++ belangrijkste aspect, + ook genoemd als aspect, - niet genoemd

Uit de tabel valt af te lezen dat zes opleidingen in het geschreven curriculum de *onderzoeksvaardigheden* als belangrijkste doel zien en zeven andere juist de *onderzoekende houding*. Hiernaast merken vier opleidingen beide aspecten als meest belangrijk aan. Opvallend is dat drie opleidingen (J, Q en U) de *onderzoekende houding* geheel niet in de doelstellingen benoemen, opleiding R als enige *onderzoeks-vaardigheden* niet noemt, en één opleiding (U) zich vooral richt op *onderzoekskennis*. Opleiding C legt naast *onderzoeksvaardigheden*, vooral nadruk op de twee aspecten

die direct met de praktijk verbonden zijn: *onderzoekend handelen* en *toepassing van resultaten uit eerder onderzoek in de praktijk*.

Tot slot beschrijft een aantal opleidingen nog extra redenen voor praktijkonderzoek in de opleiding, zonder deze als doelstellingen op te nemen: het bijbrengen van waardering voor onderzoek bij aanstaande leerkrachten (3 opleidingen), versterkte samenwerking met het werkveld (5 opleidingen), en professionalisering van opleiders door het zelf uitvoeren en begeleiden van praktijkonderzoek (9 opleidingen).

Op de vraag wat lerarenopleidingen voor basisonderwijs in Nederland met de ontwikkeling van onderzoekend vermogen in het curriculum beogen, kan samenvattend gesteld worden dat zes verschillende aspecten beschreven worden: 1. onderzoeksvaardigheden, 2. onderzoekende houding, 3. onderzoekend handelen, 4. toepassing van onderzoeksresultaten in de praktijk, 5. kennis over het fenomeen onderzoek en 6. kennis over onderzoek in het vakgebied. Ook is gebleken dat opleidingen verschillen in de focus ten aanzien van deze aspecten. Wel beogen álle opleidingen in het denkbeeldig curriculum een verbetering van de beroepspraktijk; geen van de opleidingen heeft als doel om onderzoekers op te leiden.

4.2 Onderzoekend vermogen in de leerlijnen

Alle 19 opleidingen beschrijven de ontwikkeling van onderzoekend vermogen in de vorm van een aparte leerlijn onderzoek over de vierjarige opleiding heen, die afgesloten wordt met een zelfstandig praktijkonderzoek en getoetst wordt aan de hand van een verslag. In de tweede fase van ons onderzoek hebben we deze leerlijnen, het *geschreven curriculum*, geanalyseerd op congruentie in de beschrijvingen van de beoogde leeruitkomsten, de onderwijsactiviteiten en de toetsing van de zes aspecten van onderzoekend vermogen uit de eerste fase van het onderzoek in het *denkbeeldig curriculum*. We beschrijven eerst de operationalisering van de aspecten van onderzoekend vermogen in de leerlijnen (onderzoeksvraag 2). Daarna is per aspect geanalyseerd in hoeverre er een consistente afstemming is tussen de onderwijsactiviteiten, de toetsing en de beoogde leeruitkomsten in de leerlijnen onderzoek (onderzoeksvraag 3). Aan het eind van de resultatensectie geven we een overzicht van het *constructive alignment* van alle zes aspecten per opleiding (zie Tabel 2.5).

Onderzoeksvaardigheden

De opleidingen bleken veel meer overeenkomsten dan verschillen te vertonen in de manier waarop het aspect *onderzoeksvaardigheden* in het beschreven curriculum

geoperationaliseerd wordt. Bij alle opleidingen werden vergelijkbare beoogde leeruitkomsten met betrekking tot het aspect *onderzoeksvaardigheden* expliciet bij de onderwijsactiviteiten in de leerlijnen beschreven, zelfs bij de opleiding die dit aspect niet in de doelstellingen had staan (zie Tabel 2.3). Hieruit is op te maken dat specifieke vaardigheden zoals observeren (jaar 1) en interviewen (jaar 2) overal ongeveer op dezelfde plek een zwaartepunt heeft in de leerlijn. Ook is te zien dat alleen aan het leren *opstellen van een onderzoeksvraag*, in de meeste opleidingen twee keer gericht aandacht wordt besteed; in jaar 1 en in jaar 3. Jaar 4 is bij de meeste opleidingen niet meer gericht op het aanleren van o*nderzoeksvaardigheden*.

Ook de volgorde en organisatie van de onderwijsactiviteiten met betrekking tot het aanleren van *onderzoeksvaardigheden*, zoals die terug te vinden is in de beschrijving van opdrachten en colleges, vertoont veel onderlinge overeenkomsten: vanaf het eerste jaar maken pabo-studenten kennis met *onderzoeksvaardigheden* door het oefenen in werkcolleges en het toepassen in opdrachten en stages. Opleidingen gebruiken in de opeenvolgende leerjaren over het algemeen een concentrische aanpak met praktijknabije en realistische onderzoekscasussen, waarin steeds meer en steeds grondiger onderdelen van de onderzoekscyclus uitgevoerd moeten worden door de student, resulterend in een zelfstandig praktijkonderzoek aan het eind van de opleiding.

Tabel 2.3 Verdeling van beoogde leeruitkomsten waaraan aandacht wordt besteed in de onderwijsactiviteiten met betrekking tot onderzoeksvaardigheden in de loop van de leerjaren bij alle 19 opleidingen.

Beoogde leeruitkomsten bij onderwijsactiviteiten	Jaar 1	Jaar 2	Jaar 3	Jaar 4
Observatievaardigheden	++	+	+	-
APA toepassen	++	+	+	-
Literatuur/bronnen gebruiken	++	+	+	+
Interviewvaardigheden	+	++	+	-
Academische schrijfvaardigheid	+	+	+	+
Onderzoekscyclus toepassen	+	+	++	+
Meetinstrumenten toepassen	+	++	+	-
Onderzoeksvraag opstellen	++	+	++	+
Onderzoek ontwerpen	+	++	+	+
Rapportage schrijven	+	+	++	+
Onderzoeksmethode bepalen	+	+	++	+
Probleemanalyse uitvoeren	+	+	+	+
Aanbevelingen verwoorden	+	+	+	+
Onderzoeksplan opstellen	+	+	++	+

++ veel aandacht voor, + wordt genoemd, - wordt niet genoemd.

Alle opleidingen gebruiken als vorm van toetsing voor de afronding van de onderzoeksleerlijn het schrijven van een onderzoeksverslag, waarbij de beoordeling plaatsvindt met behulp van rubrics waarin de onderzoeksvaardigheden en onderzoekskennis gedetailleerd beschreven zijn. In één opleiding is hierbij gekozen voor differentiatie (zie citaat K): de student heeft de keuze af te studeren als praktische, onderzoekende leraar (experimenter) of als academische leraar (academic).

K: "Met handhaving van de eisen van wetenschappelijkheid en toegankelijkheid kunnen de onderzoeken een meer praktisch of een meer academisch karakter hebben."[43:27]

Tussen de opleidingen waren wat betreft het aspect *onderzoeksvaardigheden* in de leerlijn, naast de grote overeenkomsten, ook kleine verschillen waarneembaar zoals: in welk leerjaar studenten zelf onderzoeksvragen gaan formuleren, of de onderzoekscyclus geheel of gedeeltelijk doorlopen wordt en in welke fase van de opleiding, welke onderzoekscyclus gebruikt wordt- afhankelijk van het studieboek-, de reikwijdte van de praktijkonderzoeken (micro- of mesoniveau), of onderzoek individueel of in teamverband uitgevoerd wordt, en of de onderzoeksvaardigheden als trainingslijn of geïntegreerd in inhoudelijke vakken en thema's worden aangeboden en getoetst.

Uit onze analyse bleek dat met betrekking tot het aspect *onderzoeksvaardigheden* de beschrijvingen van de onderwijsactiviteiten en de toetsing gedetailleerd waren en consistent met de beoogde leeruitkomsten in alle bestudeerde leerlijnen onderzoek.

Onderzoekende houding

Hoewel het aspect *onderzoekende houding* bij drie pabo's niet expliciet vermeld wordt in de doelstellingen, besteden alle pabo's in de beschreven leerlijnen aandacht aan meerdere kenmerken van een onderzoekende houding. Alle opleidingen noemen hierbij 'kritisch kijken', 'reflecteren' en 'geneigd zijn te vernieuwen/innoveren'. Meer dan twee derde van de opleidingen formuleert beoogde leeruitkomsten als 'willen begrijpen', 'nieuwsgierig zijn', 'meerdere perspectieven innemen' en 'willen delen', en 11 van 19 gebruikt 'systematisch of planmatig willen werken'.

Vervolgens hebben we geanalyseerd waar in de leerlijn de kenmerken van een onderzoekende houding zijn beschreven (zie Tabel 2.4). Alle opleidingen vertoonden veel overeenkomsten in beschrijvingen ten aanzien van onderzoekende houding in de eerste twee leerjaren als ook in de laatste twee leerjaren, waardoor we besloten hebben de resultaten weer te geven geclusterd voor jaar 1 en 2, en voor jaar 3 en 4. We

hebben gekeken naar beschrijvingen in: de doelstellingen, onderwijsactiviteiten in de eerste twee leerjaren, toetsing van de eerste twee leerjaren, onderwijsactiviteiten in het derde en vierde jaar, en de beoordelingsrubrics van de afstudeeronderzoeken.

Tabel 2.4 Aandacht voor het aspect onderzoekende houding in doelstellingen, onderwijsactiviteiten en toetsing in jaar 1 en 2, en in jaar 3 en 4 bij de 19 opleidingen

	Opleidingen																		
Onderzoekende houding	**K**	**P**	**I**	**R**	**W**	**L**	**Y**	**S**	**A**	**D**	**H**	**N**	**C**	**X**	**O**	**B**	**J**	**U**	**Q**
Doelstellingen	++	++	++	++	++	++	++	++	++	++	++	+	+	+	+	+	-	-	-
Onderwijs jr 1/2	.	.	++	++	+	+	+	+	+	-	-	+	-	-	-	-	+	+	-
Toetsing jr 1/2	.	.	+	+	-	+	+	.	.	.	-	-	.	-	-	-	-	.	-
Onderwijs jr 3/4	++	+	+	+	+	-	-	-	-	.	+	+	+	-	-	-	-	+	+
Toetsing jr 3/4	++	+	-*	-	++	+	-	-	-*	.	-*	+	.	+	+	-	+	.	-*

++ meermalen benoemd, + een enkele keer benoemd, - niet benoemd, . geen data beschikbaar, *kenmerken van *onderzoekende houding* worden in de rubrics alleen beschreven in de beoordelingskolom goed of uitstekend

Het blijkt dat 10 van de 19 pabo's in de eerste twee leerjaren in hun onderwijsactiviteiten werken aan kenmerken van een onderzoekende houding. Dit geldt zelfs voor twee pabo's die het niet in hun doelstellingen beschreven hebben. Aan de andere kant zien we ook twee opleidingen die een 'onderzoekende houding' als zeer belangrijk aanwijzen in de doelstellingen, maar er toch geen aandacht aan besteden in de onderwijsactiviteiten en toetsing. Twee opleidingen laten hun studenten in het eerste jaar onderzoek doen naar de onderzoekende houding van kinderen, waardoor studenten inzicht krijgen in het begrip onderzoekende houding. De transfer van het ontwikkelen van een onderzoekende houding bij kinderen naar het effect van deze opdracht op hun eigen onderzoekende houding wordt hierbij echter niet expliciet gemaakt. De 10 betreffende opleidingen besteden in het eerste en tweede jaar wat betreft onderzoekende houding vooral aandacht aan de kenmerken 'leren reflecteren', 'meerdere perspectieven innemen', en 'kritisch kijken'. Slechts bij vier opleidingen komt dit ook terug in de toetsing van de leerlijn in jaar 1 of 2.

Negen opleidingen beschrijven in de leerlijn voor het derde en vierde jaar kenmerken van een onderzoekende houding, waarbij vooral nadruk ligt op 'kritisch kijken'. Het 'willen delen' van onderzoeksplannen, resultaten, en procesmatige zaken, wordt voor deze fase ook een enkele keer vermeld bij onderwijsactiviteiten of in de toetsing. Vijf opleidingen werken in het vierde jaar met intervisiegroepen/ leerteams waarin studenten verplicht worden peerfeedback te geven en te krijgen. De

opleidingen geven hierbij aan dat dit kan bijdragen aan een onderzoekende houding doordat studenten een kritische blik op elkaars werk moeten tonen, te maken krijgen met perspectieven van medestudenten, zich nieuwsgierig tonen naar elkaars onderzoek, en laten zien dat ze willen delen door elkaar deelgenoot te maken van de inhoud en het proces ten aanzien van hun onderzoek. Bijvoorbeeld:

P: "Je vraagt feedback aan een critical friend en daarna aan je begeleidend docent. Bespreek de voortgang in de leerkring en vraag om advies, ook als je nog niet helemaal tevreden bent over de beschrijving van de verlegenheidssituatie!" [92:11]

O: "De bespreking in je onderzoeksgroep/leerteam dient om je plannen aan zoveel mogelijk kritische vragen van medestudenten en je onderzoeksbegeleider te onderwerpen." [74:6]

Opvallend is dat vier opleidingen kenmerken van een onderzoekende houding, zoals 'kritisch willen zijn' of 'meerdere perspectieven toelichten', in de rubrics alleen noemen in de beoordelingskolommen voor goed en/of uitstekend. In de tabel is dit gemarkeerd met een *. Dit zou betekenen dat een student voor een 'voldoende' beoordeling op het afstudeeronderzoek geen kenmerken van een onderzoekende houding hoeft te tonen.

Onderzoekend handelen

Het aspect *onderzoekend handelen* werd in 13 van de 19 opleidingen in de doelstellingen beschreven, maar de invulling van dit aspect was niet altijd even scherp uitgewerkt en varieerde van 'op een nieuwsgierige en kritische manier naar de eigen praktijk kijken en daarnaar handelen' tot 'evidence based te werk gaan'. Ook bleken slechts vier opleidingen dit aspect daadwerkelijk te beschrijven in de operationalisering in onderwijsactiviteiten en toetsing. Dit gebeurde door het ontwerpen en toetsen van onderzoekend handelen in een lessenserie (J,N), door handelingsgericht werken en actie-onderzoek (I) en door het gebruik van de regulatieve cyclus (Y).

Toepassen resultaten van eerder onderzoek in de praktijk

Toepassen van onderzoeksresultaten in de praktijk wordt door vrijwel alle opleidingen benoemd in de doelstellingen. In de operationalisering in onderwijsactiviteiten en toetsing komt het marginaal terug, bijvoorbeeld in het afstudeeronderzoek dat altijd aan de praktijk gekoppeld is. Twee opleidingen (P, C) gaven aan dit aspect als een van de belangrijkste te zien, wat vervolgens niet terug te zien was in de operationalisering.

Kennis over het fenomeen onderzoek

Kennis over het fenomeen onderzoek wordt bij alle opleidingen, zowel in onderwijsactiviteiten als toetsing, geïntegreerd met *onderzoeksvaardigheden*. Kennis over het fenomeen onderzoek wordt in geen van de opleidingen als los onderdeel getoetst, maar staat duidelijk beschreven in de rubrics van de afstudeeronderzoeken.

Kennis over eerder onderzoek in het vakgebied

Ook *kennis over eerder onderzoek in het vakgebied* wordt in alle leerlijnen volledig geïntegreerd met *onderzoeksvaardigheden*. Aan het gebruiken van eerder onderzoek wordt bij alle opleidingen aandacht besteed in de beoordelingsrubrics van het afstudeeronderzoek. Hierbij gaat het niet om de toepassing onderzoeksresultaten in de praktijk en valt derhalve onder het aspect *kennis over eerder onderzoek in het vakgebied*. Dit komt in de toetsing terug als onderdeel van de probleemanalyse of beschrijving van het theoretisch kader, wat bij alle opleidingen deel uitmaakt van het onderzoeksplan.

4.3 *Constructive alignment* in de leerlijnen onderzoek

Samenvattend laat de analyse zien dat er een consistente afstemming is tussen beoogde leeruitkomsten, onderwijsactiviteiten en toetsing wat betreft de aspecten *onderzoeksvaardigheden*, *kennis over het fenomeen onderzoek* en *kennis over eerder onderzoek* (zie Tabel 2.5). Wat betreft het aspect *onderzoekende houding* wordt slechts in

Tabel 2.5 Constructive alignment van de aspecten van onderzoekend vermogen in de verschillende opleidingen

	Opleiding																		
Aspect	**B**	**J**	**N**	**O**	**Q**	**X**	**H**	**I**	**S**	**P**	**W**	**A**	**D**	**K**	**L**	**R**	**Y**	**C**	**U**
Onderzoeks-vaardigheden	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	+	++	++	++
Onderzoekende houding	-	o	+	o	-	o	o	+	o	++	+	o	o	++	+	+	o	o	o
Onderzoekend handelen	-	+	+	o	-	-	o	+	o	o	o	o	o	o	-	-	+	o	-
Toepassing onderzoek in praktijk	+	+	+	+	+	+	+	+	+	o	+	+	+	+	+	-	+	o	+
Kennis fenomeen onderzoek	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++
Kennis onderzoek vakgebied	++	+	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++	++

++ alignment, + gedeeltelijke alignment, o geen alignment, - aspect afwezig

twee opleidingen een consistente afstemming gevonden en het aspect *onderzoekend handelen* is slechts in vier opleidingen *aligned*. Het *toepassen van onderzoeksresultaten in de praktijk* is bij vrijwel alle opleidingen expliciet in de doelstellingen beschreven, maar komt marginaal terug in de operationalisering in onderwijsactiviteiten en toetsing.

5 Conclusie en discussie

Deze documentanalyse had als doel inzicht te krijgen in de doelen van studentonderzoek en de operationalisering hiervan in het beoogd curriculum van lerarenopleidingen basisonderwijs in Nederland (Van den Akker, 2003). Daarmee beoogden wij inzicht verkrijgen in een theoretische en empirische invulling van het begrip 'onderzoekend vermogen' voor lerarenopleidingen basisonderwijs. Uitgangspunt voor onze analyse was een op basis van literatuurstudie verkregen overzicht van belangrijkste aspecten bij het aanleren van studentonderzoek in de lerarenopleiding. Op grond daarvan kwamen wij tot de definitie van het begrip onderzoekend vermogen in lerarenopleidingen: *Onderzoekend vermogen* is de bekwaamheid om onderzoek te doen én te gebruiken ter verbetering van de eigen beroepspraktijk door de integratie van onderzoeksvaardigheden, een onderzoekende houding, onderzoekskennis, en het kunnen toepassen van onderzoeksresultaten in de praktijk. Bij de analyse van de doelstellingen van onderzoekend vermogen op basis van deze definitie, bleek dat lerarenopleidingen basisonderwijs het aspect *onderzoekskennis* opsplitsen in *kennis over het fenomeen onderzoek* en *kennis over onderzoek in het vakgebied*. Daarnaast werd nog een zesde aspect expliciet genoemd: '*onderzoekend handelen*'. Deze zes aspecten zijn in de verdere analyse gebruikt en opgenomen in onze uiteindelijke definitie van onderzoekend vermogen in lerarenopleiding basisonderwijs.

Alle opleidingen beogen met onderzoek in het curriculum een verbetering van de onderwijspraktijk; hetzij door de professionele ontwikkeling van de aanstaande leraar en de inzet van onderzoek als leerstrategie (zie ook Bolhuis, 2012), dan wel door een vorm van onderwijsinnovatie (zie ook Dobber et al., 2012). Deze doelstellingen sluiten aan bij de resultaten van de reviewstudie van Zwart et al., (2015) naar de aard en betekenis van onderzoek door docenten. Duidelijk is dat geen enkele lerarenopleiding basisonderwijs beoogt onderzoekers op te leiden en vrijwel alle opleidingen benoemen het aspect *onderzoekende houding* als belangrijkste doelstelling.

De tweede belangrijke bevinding van het onderzoek is dat de operationalisering

van het onderzoekend vermogen, in de beschrijvingen van onderwijsactiviteiten en toetsing, veel meer overeenkomsten dan verschillen tussen de opleidingen vertoont; alle opleidingen werken met een meer of minder geïntegreerde onderzoeksleerlijn, waarin veel aandacht is voor kennis over het fenomeen onderzoek en onderzoeksvaardigheden, en die verbonden is met opdrachten voor de opleiding alsook met de praktijk. Opleidingen sluiten hierbij aan op de twee ontwerpprincipes voor het slagen van onderzoekscolleges op de lerarenopleiding basisonderwijs (Van der Linden et al., 2012, 2015), namelijk gebruik maken van voorbeelden over onderzoek uit de dagelijkse onderwijspraktijk en een 'onderzoeksmatige' opzet van de onderwijsactiviteiten. Bij alle opleidingen wordt deze onderzoeksleerlijn afgesloten met een zelfstandig praktijkonderzoek en getoetst met een onderzoeksverslag. Dit komt ook overeen met de toetsing van studentonderzoek in lerarenopleidingen in onder andere Finland (e.g., Aspfors & Eklund, 2017; Puustinen, Säntti, Koski, & Tammi., 2018; Toom et al., 2010;), Noorwegen (e.g., Munthe & Rogne, 2015), Rusland (Valeeva & Garufov, 2017) en Portugal (Flores, 2018).

Bij de derde onderzoeksvraag hebben we geanalyseerd of de opleidingen in hun beschrijvingen van beoogde leeruitkomsten, onderwijsactiviteiten en toetsing met betrekking tot de aspecten van onderzoekend vermogen, voldeden aan het principe van *constructive alignment* van Biggs en Tang (2011). Voor de aspecten *kennis over het fenomeen onderzoek, kennis over onderzoek in het vakgebied* en *onderzoeksvaardigheden* bleek dit het geval. Het is duidelijk dat alle opleidingen, analoog aan onderzoek in het wetenschappelijk onderwijs, in dit eerste decennium van studentonderzoek in het hbo ingezet hebben op onderwijs gericht op onderzoekskennis en vaardigheden en gekozen hebben voor toetsing in de vorm van een onderzoeksverslag. Deze focus is ook zo gekozen omdat de visitatie van de NVAO in 2014 zich met name richtte op de toetsing en het gerealiseerd eindniveau, waarmee de aandacht op de kwaliteit van de eindwerkstukken kwam te liggen. Dit betekende voor de opleidingen ook een focus op de begeleiding van afstudeeronderzoeken en daarmee op de professionalisering van de lerarenopleiders op het terrein van onderzoekskennis en vaardigheden (Geerdink et al., 2016).

Opvallend is dat *onderzoekend handelen* en *toepassing van onderzoeksresultaten* bij respectievelijk 13 en 18 van de opleidingen expliciet in de doelstellingen vermeld stonden, maar zowel in de onderwijsactiviteiten als in de toetsing nauwelijks of marginaal terug kwamen. Mogelijk zijn deze aspecten op andere plaatsen dan in de onderzoeksleerlijn in het curriculum beschreven en getoetst; bijvoorbeeld bij de stage. Opvallend is ook dat kenmerken van een *onderzoekende houding* slechts in de

helft van de gevallen in onderwijsactiviteiten beschreven zijn, hoewel vrijwel alle opleidingen dit aspect in de doelstellingen benoemen. In de toetsing ontbreekt dit aspect in de meeste gevallen helemaal óf blijkt alleen vereist te zijn voor een hogere beoordeling. Hiermee voldoet de beschrijving van de *onderzoekende houding* slechts in twee van de 19 opleidingen volledig aan het principe van *constructive alignment* (Biggs & Tang, 2011). Een oorzaak van deze inconsistentie zou kunnen liggen in het feit dat de *onderzoekende houding* meerdere interpretaties kent, niet tastbaar is, en lastig te toetsen is (Cochran-Smith et al., 2009; Leeman & Wardekker, 2014). Meijer, Geijsel, Kuijpers, Boei en Vrieling (2016) deden onderzoek bij Nederlandse educatieve masteropleidingen en komen tot een uitsplitsing van twee meetbare onderdelen van de onderzoekende houding: de interne reflectieve dimensie en de extern gerichte dimensie van hang naar professionele persoonlijke kennisontwikkeling. Doordat deze beide dimensies te onderscheiden zijn van vaststaande persoonskenmerken zoals openheid en natuurlijke nieuwsgierigheid, zijn ze verder tot ontwikkeling te brengen binnen het hoger onderwijs. Ook Kreijns, Vermeulen, Evers en Meijs (2019) hebben een instrument ontwikkeld om de onderzoekende houding bij docenten (in opleiding) te meten: de Teachers' inquiry habit of mind scale (T-IHMS). Voor ons onderzoek is het aannemelijker dat de discrepantie tussen doelen en operationalisering bij deze drie aspecten -*onderzoekende houding*, *onderzoekend handelen en toepassing onderzoeksresultaten*- niet direct ligt in het gebrek aan meetbaarheid, maar een indicatie is voor het feit dat praktijkonderzoek nog sterk in ontwikkeling is op lerarenopleidingen basisonderwijs. Inhoudelijk, op het gebied van onderzoekskennis en vaardigheden, is het laatste decennium een enorme verbeterslag gemaakt, maar de gewenste link tussen theorie en praktijk lijkt nog onvoldoende bewerkstelligd. Dit komt overeen met ontwikkelingen bij lerarenopleidingen in andere landen (e.g., Flores, 2018; Menter et al., 2017; Valeeva & Gafurov, 2017).

Hoewel een overgroot deel van de opleidingen voor leraar basisonderwijs (19 van de 25) geparticipeerd heeft in dit onderzoek, kunnen we een aantal redenen aanwijzen die beperkend zijn voor de resultaten. Ten eerste bleken de bestudeerde documenten te verschillen in de mate van detail. Mede hierdoor hebben we alleen de onderzoeksleerlijnen in de studie naar onderwijsactiviteiten en *alignment* betrokken, terwijl de beoogde doelstellingen, bijvoorbeeld met betrekking tot *onderzoekend handelen*, wellicht in andere delen van het curriculum geoperationaliseerd werden. Ten tweede hebben we ons beperkt tot een documentanalyse met betrekking tot het beoogd curriculum. Een nader onderzoek naar aspecten van onderzoekend vermogen in het geïmplementeerde, alsook in het bereikte curriculum, zou een waardevol vervolg

kunnen blijken, om vast te kunnen stellen wat de bijdrage van praktijkonderzoek is aan de professionalisering van aanstaande leraren basisonderwijs (Van den Akker, 2003). Hoe het curriculum geïmplementeerd wordt, blijkt ook afhankelijk te zijn van de opvattingen van lerarenopleiders over onderzoek, hun eigen achtergrond en ervaring met onderzoek (Willemse & Boei, 2013). In een vervolgonderzoek zou het interessant zijn lerarenopleiders hierover te bevragen en dit af te zetten tegen de percepties van studenten over praktijkonderzoek in de opleiding.

Tot slot moeten we constateren dat het geschetste beeld slechts een momentopname is in een veranderend systeem. Deze studie heeft een empirische bijdrage geleverd aan het begrip over onderzoekend vermogen in de lerarenopleiding basisonderwijs als de bekwaamheid om onderzoek te doen én te gebruiken ter verbetering van de eigen beroepspraktijk door de integratie van zes aspecten: 1. onderzoeksvaardigheden, 2. onderzoekende houding, 3. onderzoekend handelen, 4. toepassing van onderzoeksresultaten in de praktijk, 5. kennis over het fenomeen onderzoek en 6. kennis over onderzoek in het vakgebied. Deze operationalisering van onderzoekend vermogen in zes aspecten kan wellicht ook een bijdrage vormen aan inzicht over het begrip onderzoekend vermogen bij andere hbo-opleidingen. Er is nog geen onderzoek gedaan naar ontwikkeling van onderzoekend vermogen bij disciplines met een minder scherp beroepsbeeld. Vervolgonderzoek naar de verschillende aspecten bij andere hbo-opleidingen zou interessant zijn, om zicht te krijgen op het generieke begrip over de ontwikkeling van onderzoekend vermogen.

Het begrip over onderzoekend vermogen in deze studie kan ook bijdragen aan de doorontwikkeling van de implementatie van praktijkonderzoek aan de opleiding voor leraren basisonderwijs in Nederland. Hierin behoort, analoog aan de doelstellingen, de onderzoekende houding en het onderzoekend handelen meer een centrale rol te krijgen, terwijl in de bestudeerde curricula onderzoekskennis en vaardigheden nu vooral de boventoon voeren. Zoals eerder vermeld zijn de zes aspecten van onderzoekend vermogen niet los van elkaar te zien en is bijvoorbeeld kennis uit het vakgebied een voorwaarde om onderzoeksresultaten te kunnen toepassen in de praktijk, en ook bepalend voor de kwaliteit van het onderzoekend handelen. De sterke focus op onderzoekskennis en vooral onderzoeksvaardigheden lijkt impliciet de boodschap te geven dat de opleidingen toch beogen op te leiden tot onderzoeker. Deze boodschap wordt veelal nog versterkt door de vorm van het onderzoeksverslag, dat sterk kan lijken op de vorm van een wetenschappelijk onderzoeksartikel. De consequentie hiervan kan zijn dat aanstaande leraren te weinig een onderzoekende houding mee krijgen als leraar. Onderzoek wordt dan niet geassocieerd als iets wat

hen een beter begrip van het leren van hun leerlingen kan geven en hun lesgeven in de klas kan verbeteren, maar slechts als een opdracht voor de opleiding of een aparte activiteit voor onderzoekers. Dat zou dus voorbij gaan aan het uiteindelijke doel van het bevorderen van onderzoekend vermogen in de opleiding, namelijk het opleiden van nieuwsgierige en kritische leraren, die *evidence informed* werken.

Noot 1. Vanaf 2013 is de naam HBO-raad veranderd in Vereniging Hogescholen

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

CHAPTER 3

Development of an inquiry stance in the implemented and attained curriculum of primary teacher education

Having established in Chapter 2 that institutes for primary teacher education in the Netherlands lack some alignment regarding pre-service teacher inquiry in the intended curriculum, Chapter 3 moves on to the implemented and attained curriculum. Through a survey and in focus groups, pre-service teachers and teacher educators shared their perceptions about the purpose and value of pre-service teacher inquiry as well as the way it is taught and the most important learning outcomes.

This chapter is based on: Van Katwijk, L., Jansen, E., Van Veen, K. (submitted). *"No friction, no shine!": Pre-service Teacher Inquiry in Primary Teacher Education*. Manuscript submitted for publication.

Abstract

This study aims to gain insight into the perceived purpose and value of pre-service teacher inquiry in Dutch primary teacher education at the undergraduate level; it also assesses the implementation of teaching and learning activities and learning outcomes associated with teacher inquiry. In the Netherlands, inquiry competence in primary teacher education develops over a four-year period, resulting in students' completion of capstone projects, using practitioner inquiry. The authors combine a survey with focus groups of teacher educators and pre-service teachers from eight institutes. They find differences between pre-service teachers' perceptions of the implementation of inquiry competence and teacher educators' visions and perceptions of such implementation. All participants, students and educators, believe inquiry to be valuable and perceive learning outcomes of inquiry to be enriching, yet about half of the pre-service teachers do not to expect to undertake inquiry in their future teaching jobs.

1 Introduction

Working inquiry-based is increasingly assumed to be necessary for teachers in primary and secondary education (Baan, Gaikhorst, & Volman, 2018; Cochran-Smith & Lytle, 2009; Darling-Hammond, 2017). Therefore, in recent decades, Dutch bachelor-level teacher education programs have paid attention to pre-service teacher research. To enhance and influence pre-service teachers' affective and cognitive attitudes about research and developing their research skills, teacher education is assumed to play a crucial role (e.g., Aspfors & Eklund, 2017; Maaranen, 2009; Munthe & Rogne, 2015; Van der Linden, Bakx, Ros, Beijaard, & Vermeulen, 2012). Darling-Hammond's (2017) comparative study of teacher education in various countries shows that a research-based orientation combined with an inquiry approach to practical preparation enhances teacher effectiveness.

To date, studies of pre-service teacher research have focused on graduate degree programs, such as research-based teacher education programs in Finland that aim to provide teachers with an understanding of research practice and give them the ability to make rational, theory-based decisions (e.g., Aspfors & Eklund, 2017; Munthe & Rogne, 2015; Puustinen, Säntti, Koski, & Tammi, 2018; Råde, 2019; Toom et al., 2010). Only a few studies have reported on the achievements and implementation of pre-service teacher research in undergraduate programs (e.g., Dunn, Harrison, & Coombe, 2007; Guilbert, Lane, & Van Bergen, 2016; Reis-Jorge, 2007; Van der Linden et al., 2012, Van der Linden, Bakx, Ros, Beijaard, & van den Bergh, 2015), even though research integration and experience can help undergraduate students prepare for a profession that demands continuous learning and deliberate adjustment to changing contexts (Griffioen, 2018; Healey & Jenkins, 2009; Munthe & Rogne, 2015).

In the Netherlands, over 90% of primary teacher education occurs at the bachelor level in universities of applied sciences (UASs); there is a strong focus on teaching practice. About 10 years ago, as a result of the Bologna declaration, the European Commission established the European qualification framework (European Commission, 2018) and the primary teacher education curriculum was reformed to include research activities. However, systematic evaluation of assumed value of pre-service teacher research for teacher quality has not yet taken place. International literature on pre-service teacher research shows clearly positive impacts of research training, such as the production of newly qualified teachers who engage in critical reflection, use research competence in practice, and adapt their teaching to students' needs (e.g., Aspfors & Eklund, 2017; Cochran-Smith, Barnatt, Friedman, & Pine, 2009;

Kowalczuk- Walędziak, Lopes, Underwood, Daniela, & Clipa, 2019). However, authors also identify costs, such as time invested, difficulties with sustainability, continual need to nurture partnerships with schools, and added demands on already crowded curricula (e.g., Cochran-Smith & Lytle, 2009; Kowalczuk-Walędziak et al., 2019; Ulvik, 2014). A document analysis of policy documents and program descriptions of Dutch primary teacher education showed that intended learning outcomes of pre-service teacher research are not aligned fully with described teaching activities and assessments (Van Katwijk et al., 2019b). This lack of alignment may be leading to disappointing results in learning outcomes (Biggs & Tang, 2011). Accordingly, the aim of our study is to gain insight into the purpose and value of pre-service teacher research in primary teacher education, assess its implementation in teaching activities, and identify its learning outcomes, as perceived by students and teacher educators.

2 Theoretical framework

Purpose of pre-service teacher research and inquiry

To gain insight into the purpose and value of pre-service teacher inquiry for primary teacher education, we must distinguish between research and inquiry, though many descriptions of teacher education programs use the terms interchangeably (Munthe & Rogne, 2015). We consider pre-service teacher research a form of practitioner inquiry (e.g., Borko, Liston, & Whitcomb, 2007; Cochran-Smith et al., 2009; Munthe & Rogne, 2015; Zeichner & Noffke, 2001); a conceptual umbrella which "refers to a variety of educational research modes […], including action research, teacher research, narrative inquiry, […]and the use of teaching as a context for research", and is conducted by practitioners (Cochran-Smith et al., 2009, p.18). We prefer to use the term 'inquiry' rather than 'research', though no such distinction exists in the Dutch language. According to Reid (2004, p. 4), "Inquiry is a process of systematic, rigorous and critical reflection about professional practice, and the contexts in which it occurs, in ways that question taken-for-granted assumptions. Its purpose is to inform decision-making for action." Inquiry involves educators pursuing their 'wonderings', using insights from previous research about practices, and exploring alternatives systematically using basic research knowledge and skills. However, the use of more complicated quantitative and qualitative research methods and scientific, international literature, as well as the construction of knowledge applicable to other researchers ~~which~~ is essential to research ~~are~~ optional for inquiry (Munthe & Rogne, 2015; Reid, 2004).

The aim of Dutch primary teacher education programs is to educate pre-service teachers to become practitioners who use intentional, systematic methods as learning strategies to inquire into their own practices (Borko et al., 2007; Cochran-Smith et al., 2009). Previous research indicates that pre-service teacher inquiry, which is similar to action research, may be a basis for future professional development (Ponte, Bijaard, & Ax, 2004); ideally, pre-service teachers should be driven by curiosity and knowledge about educational problems in particular contexts to improve their own educational practices (Jacobs, Yendol-Hoppey, & Dana, 2015; Van Katwijk et al., 2019a). The aim of pre-service teacher inquiry in primary teacher education is to educate teachers to take an inquiry stance and thereby produce inquiring teachers (Cochran-Smith & Lytle, 2009) who are curious and critical—that is, teachers whose work is inquiry-based (Baan et al., 2018; Toom et al., 2010; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2019).

To develop an inquiry stance, or to be able to work inquiry-based, pre-service teachers are assumed to develop five related competencies (Van Katwijk et al., 2019a): (1) *basic research knowledge* (e.g., methodology); (2) *knowledge about current research* in the discipline (e.g., Aspfors & Eklund, 2017; Baan et al., 2018; Dana & Yendol-Hoppey, 2014; Jacobs et al., 2015; Munthe & Rogne, 2015; Sachs, 2016); (3) *development of (basic) research skills*, including analyzing problems related to practice, undertaking literature reviews, collecting and analyzing data, and communicating results (Aspfors & Eklund, 2017; Hökkä & Eteläpelto, 2014; Munthe & Rogne, 2015); (4) *ability to apply findings* from previous research to practice (Aspfors & Eklund, 2017; Baan et al., 2018; Dana & Yendol-Hoppey, 2014); and (5) *development of inquiry habit of mind* (e.g., Earl & Katz, 2006).

Regarding the last competency, there are many interpretations of inquiry habit of mind; international literature includes a variety of similar descriptions and terms (e.g., Earl & Katz, 2006; Cochran-Smith & Lytle, 2009; Schön, 1986; Uiterwijk-Luijk et al., 2019). According to Earl and Katz (2006), an inquiry habit of mind is a way of thinking that seeks to gain profound understanding, reserve judgment, tolerate contradictions, have different perspectives, and ask questions. Collaboration with colleagues is essential to developing this habit of mind, framing questions, and understanding collected data (Kroll, 2006). Literature often uses the term "inquiry as stance" interchangeably with inquiry habit of mind (e.g., Jacobs et al., 2015; Uiterwijk-Luijk et al., 2019); however, Cochran-Smith and Lytle (2009) distinguish them, with inquiry as stance referring to a way of looking, acting, and having a habitual, continuous attitude. When teachers take an inquiry stance, they act as reflective practitioners (Schön, 1986), pose questions or "wonderings," use findings of previous

research and scientific knowledge in their practice, and share new insights (Dana & Yendol-Hoppey, 2014). In this research, we consider inquiry as stance similar to inquiry-based work (Baan et al., 2018; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2017), and inquiry habit of mind is a crucial component. The Dutch primary teacher education program describes the development of inquiry habit of mind as one of the most important purposes and value of pre-service teacher inquiry (Van Katwijk et al., 2019b). Its characteristics include being critical, curious, and willing to share; seeking to innovate and improve; and wanting to achieve deep understanding (Van der Rijst, 2009).

How to develop inquiry competence

Compared with the volume of literature on teaching research skills to graduate students, there is scarce literature that focuses on teaching pre-service teacher inquiry competence to undergraduates (Dunn et al., 2008; Munthe & Rogne, 2015). Healey and Jenkins's (2009) general model of undergraduate research and inquiry

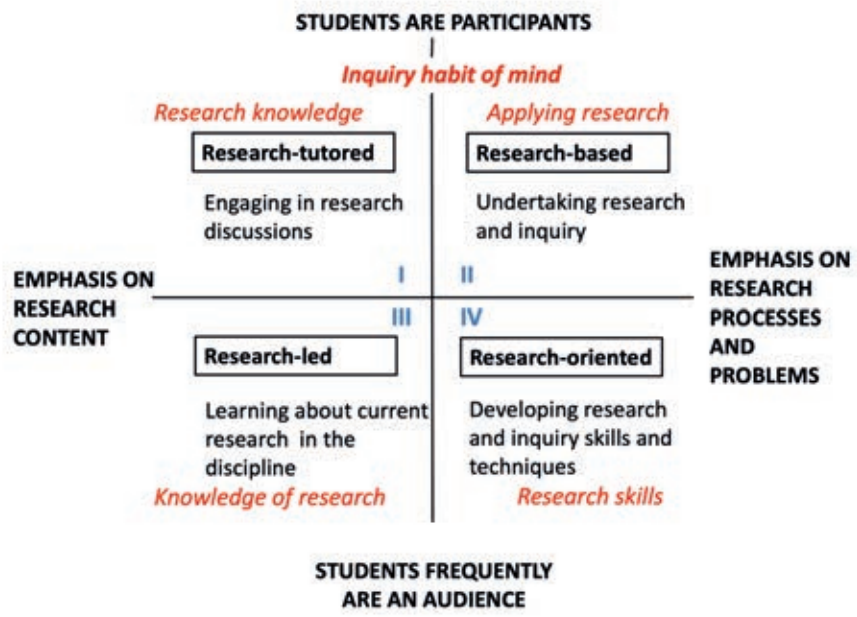


Figure 3.1 Healey and Jenkins (2009) model, adapted with inquiry competencies

has two axes: vertical (i.e., from students as participants to students as audience) and horizontal (i.e., from focus on research content to focus on research processes) (see Figure 3.1). This division leads to four main types of undergraduate engagement with research and inquiry: (1) *research-tutored* (i.e., engaging in research discussions), (2) *research-based* (i.e., undertaking research and inquiry), (3) *research-led* (i.e., learning about current research in the discipline), and (4) *research-oriented* (i.e., developing research and inquiry skills). All four ways are valid and valuable, and curricula should contain elements of all of them (Healey & Jenkins, 2009). The development of pre-service teachers' inquiry competence fits into this model (Figure 3.1). To develop an inquiry habit of mind, students should participate actively in either research-tutored or research-based activities.

Table 3.1 Overview of teaching and learning activities for developing inquiry competence, in relation to the model of Healey and Jenkins (2009)

Inquiry competence	Model of Healey & Jenkins	Teaching/learning activity
Inquiry habit of mind	Research-tutored & Research-based Quadrant I + II	- Pre-service teachers practice with argumentation, decision making, and justification while problem solving (Toom et al., 2010) - Reflection on the process and outcomes of research and inquiry (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; White et al., 2016) - Working in pairs, critical friends, or groups; communities of inquiry (Dobber, Akkerman, Verloop, & Vermunt, 2012; Van der Linden et al., 2012) - Organization of formal conferences, in which pre-service teachers present their inquiries to peers, teacher educators, teachers, and members of school boards (Schulz & Mandzuk, 2005)
Research application	Research-based Quadrant II	- Inquiry-based classes, practicing with small inquiries (Munthe & Rogne, 2015; Schulz & Mandzuk, 2005) - Capstone inquiry project (e.g., Aspfors & Eklund, 2017; Dunn et al., 2008; White et al., 2016) - Inquiry collaboration between universities and schools (Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Schulz & Mandzuk, 2005)
Research knowledge	Research-tutored Quadrant I	- Technical training in research methodology (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; Toom et al., 2010; White et al., 2016) - Reading literature (Munthe & Rogne, 2015)
Knowledge about research in domain	Research- led Quadrant III	- Familiarizing pre-service teachers with findings of previous research (Ulvik & Riese, 2016) - Use of research examples from practice and authentic learning tasks (Van der Linde et al., 2015) - Lectures based partly on own research (Aspfors & Eklund, 2017; Munthe & Rogne, 2015; Toom et al., 2010)
Research skills	Research-oriented Quadrant IV	- Practical training in research methodology (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; Toom et al., 2010; White et al., 2016) - Academic writing course (Munthe & Rogne, 2015; Rade, 2019)

These inquiry competencies are intertwined in practice; for example, it is not possible to inquire without using research knowledge or skills. However, the distinction between the competencies is functional with regard to teaching and learning related to pre-service teacher inquiry. Which teaching and learning activities are suitable for teaching and stimulating to work inquiry-based? Table 3.1 (next page) displays the program teaching and learning activities that literature identifies as effective in engaging pre-service teachers in inquiry and developing inquiry competence.

Study context

Our study focuses on Dutch primary teacher education that leads to a professional bachelor degree. Because pre-service teacher inquiry has become a compulsory element in these programs, the programs now pay much attention to intensive research-skill professionalization of teacher educators, teaching about research and inquiry, and supervision of pre-service teachers' projects (Geerdink, Boei, Willemse, Kools, & Van Vlokhoven, 2016). Although Dutch institutes of teacher education are free to design their own curricula according to nationally determined teaching standards, a previous document analysis of pre-service teacher inquiry in the programs shows strong similarities in teaching activities and assessment (Van Katwijk et al., 2019a). Approximately one-third of the Dutch primary teacher education program is directly related to practice; it concludes with a practical period of 20 weeks, during which pre-service teachers teach autonomously three days a week. Students spend about 20 to 30 ECTS (European Credit Transfer System) in total on pre-service teacher inquiry in a teaching–learning trajectory over four years. As their final capstone activity (9–15 ECTS), they undertake pre-service teacher inquiry projects that are directly connected to their own practices, for example, design research or action research. Most of these inquiries are small in scale and involve qualitative design, limited quantitative data, and use of practice-based literature such as handbooks and professional literature (Baan, Gaikhorst, van't Noordende, & Volman, 2019). With regard to described teaching activities and assessments, all institutes focus on research skills (i.e., Quadrant IV, research-oriented), despite citing the development of an inquiry habit of mind (Quadrants I + II, research-tutored and research-based) as their main purpose (Van Katwijk et al., 2019a).

Research questions

To gain insight into the purpose and value of pre-service teacher research in Dutch primary teacher education, we used the curriculum model of Van den Akker (2003)

as analytical framework. This model distinguishes intended, implemented, and attained curricula. The intended curriculum describes the purpose and value; the implemented curriculum is the teaching program as interpreted by its users; and the attained curriculum consists of learning experiences as perceived by learners (pre-service teachers) and the resulting learning outcomes (Van den Akker, 2003). We compared the perceptions of pre-service teachers and teacher educators with descriptions of the intended curriculum, as described in our previous study (Van Katwijk et al., 2019b). We formulated the following research questions:

Research question 1: How are the purpose and value of pre-service teacher inquiry in primary teacher education perceived?

Research question 2: How is the development of pre-service teacher inquiry competence implemented in teacher education programs?

Research question 3: What are the most important learning outcomes from pre-service teacher inquiry?

3 Method

Design of the study and participants

We used a survey followed by focus groups for deeper explanation (Figure 3.2). This combination of both qualitative and quantitative data provides a better understanding of the research problem (Cohen, Manion, & Morrison, 2013). Before the focus group sessions took place, we asked all participants to complete a "perception pre-service teacher inquiry" questionnaire. Completing the survey helped participants focus on their own perceptions of pre-service teacher inquiry before sharing them with the focus group. Moreover, it allowed us to ask in-depth questions about their answers during the focus group sessions. The focus group sessions helped us understand the perceptions of teacher educators and pre-service teachers and obtain multiple perspectives on pre-service teacher inquiry (Puchta & Potter, 2004).

We invited teacher educators and pre-service teachers from eight institutes for primary school teacher education in the Netherlands to participate in the focus group sessions. We selected these eight institutes from a total of 25 Dutch institutes, according to the variety of their program descriptions of intended learning outcomes, teaching methods, and assessments of pre-service teacher inquiry (Van Katwijk et al., 2019b). We held the focus group sessions in 2016 and 2017; the sessions for pre-service

teachers were 60 minutes in length, and the sessions for teacher educators were 90 minutes in length.

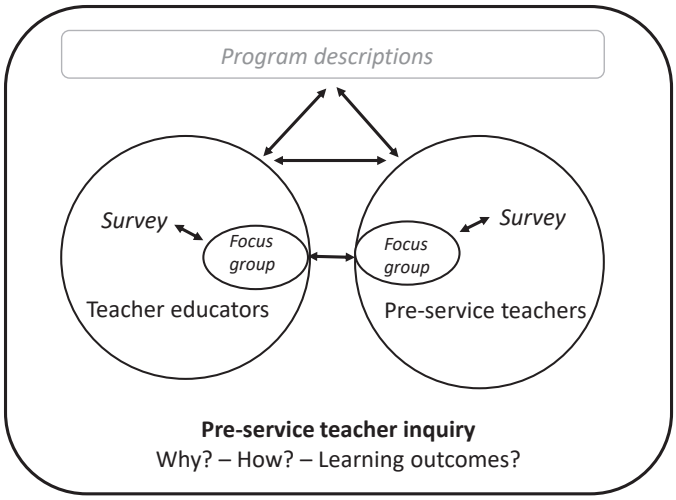


Figure 3.2 Design of the multiple methods study

To improve reliability, we asked an additional 58 teacher educators and 329 pre-service students from 11 different institutes to fill out the questionnaire (without participating in the focus groups), using the electronic learning environment of the institutes. The response rate was very low (< 5%), possibly as a result of research fatigue and the workload of pre-service teachers just before graduation. We tested whether the focus group participants deviated from other respondents and found no differences. Therefore, our data provide insights from a broad scope of teacher educators and pre-service teachers. Table 3.2 contains an overview of participants in the survey and focus groups.

In total, 359 pre-service teachers completed the questionnaire about their perceptions of pre-service teacher inquiry; 30 of these students participated in the focus group sessions. Their participation was voluntary; our only requirement was that the students were in the final phase of their studies. All teacher educators who participated in the focus group sessions performed teaching tasks related to development of inquiry competencies or supervised pre-service teacher inquiry. Some teacher educators also played roles in curriculum design. The participants of the survey provided written informed consent and all participants of the focus groups provided verbal informed consent.

Table 3.2 Overview of participating institutes (TE UASs), teacher educators (TEs) and pre-service students (PSTs) in the survey and focus groups

TE UAS	Survey # TEs	Focus group # TEs	Survey # PSTs	Focus group # PSTs
A	6	14	17	3
B	6	7	22	9
C	3	4	11	0*
D	3	4	22	4
E	6	2	8	4
F	2	5	6	4
G	65	7	235	3
H	7	5	5	3
I	0	0	1	0
J	0	0	13	0
K	0	0	19	0
Total	**98**	48	**359**	30

*We were unable to organize a PST focus group for Institute C because of time constraints on the pre-service teachers.

Data collection and analysis

Survey

Our questionnaire was inspired by a questionnaire used in previous research on student perceptions, attitudes, and research behavior in their future profession (Van der Linden et al., 2015); it consisted of four open questions about the students' research questions, their most important learning gains, the weak and strong points of their programs, and 35 Likert-type scale questions. We chose a 6-point Likert-type scale (1 = "totally disagree" to 6 = "totally agree") to avoid a neutral option. We negatively formulated eight items and applied reverse scoring in the analysis, such as, "Conducting research is a compulsory component of the degree program but I do not understand how it is useful for a teacher."

We conducted a principal component analysis with Oblimin rotation in SPSS 25 of the 35 Likert-type scale items, according to our expectation that the factors would be correlated. We used a cut-off value of .40 for the factor loadings (Field, 2019). This exploratory analysis revealed four factors for interpretation. Table 3.3 shows the Cronbach's alphas retrieved from the reliability analysis. See appendix B for the factors with factor loadings.

Table 3.3 Scales of the survey on pre-service teacher inquiry and Cronbach's alpha

	Cronbach's –alpha
1. Perceived *value* of pre-service teacher inquiry (n = 7)	.89
2. Expectation of using inquiry competence in one's *future* profession (n=11) (n = 11)	.92
3. Perceived ability of *inquiry competence* (n = 6)	.84
4. Perceived *ease* of undertaking pre-service teacher inquiry (n = 4)	.70

In all analyses, we compared pre-service teachers with teacher educators. For the first research question, we analyzed the average scores on the *Value* and *Future* scales. The *Value* scale consisted of items related to cognitive attitudes (e.g., research is deepening) and affective attitudes (e.g., research is nice) toward pre-service teacher inquiry. The *Future* scale indicates use of inquiry competence in the future and perceptions of the role of research/inquiry in the profession. For the second research question, we analyzed two open questions about the strongest and weakest points of the program; we clustered the answers inductively and calculated the percentages of how often the answers appeared. A total of 80 pre-service teachers and 99 teacher educators answered these questions. To answer the third research question about learning outcomes, we compared their average scores and frequencies on the *Inquiry competence* and *Ease* scales. The former indicated a respondent's ability to undertake pre-service teacher inquiry, and the latter related to a respondent's perception of the ease of pre-service teacher inquiry. To analyze the open question on the most important personal learning outcomes, we used the five inquiry competencies in our theoretical framework. A total of 299 pre-service-teachers and 83 teacher educators answered this question.

Focus groups

During the semi-structured focus group sessions, we used an interview scheme, guided by our research questions and questionnaire items. After we transcribed the focus group recordings verbatim, we conducted a qualitative content analysis in ATLAS.ti, using a coding scheme based on the theoretical framework and the main findings of the survey (Friese, 2014). For example, to analyze perceived purpose and value of pre-service teacher inquiry in the curriculum, we studied the first responses to the question "Why do you think research is in the primary teacher education curriculum?" We analyzed responses according to the inquiry competencies of research knowledge, knowledge about current research, research skills, application of research, and inquiry habit of mind.

We used both within-case analysis (i.e., within focus groups, within the group of pre-service teachers, and within the group of teacher educators) and cross-case analysis (i.e., between those groups) (Miles, Huberman, & Saldana, 2014). Furthermore, we compared the focus group answers with survey findings related to the *Value* and *Future* scales. Moreover, we asked focus group participants about their perceptions of the methods used to teach them how to undertake pre-service teacher inquiry projects over the four years of teacher education and how to develop inquiry habit of mind. Some new codes corresponding to frequently mentioned issues, such as experienced supervision, emerged from the data, though we did not specifically ask students about the most important things they had learned from their pre-service teacher inquiry. Therefore, we compared their reports with related survey data, according to the *Ease* and *Inquiry competence* scales and the open question about the most important learning opportunity associated with pre-service teacher inquiry. We checked for differences across focus groups and compared statements between teacher educators and students (i.e., cross-case analyses).

We tested the reliability of our data in multiple ways: First, to prevent interpretation bias, we recorded the focus group sessions and transcribed the recordings. We sent the transcripts to the focus group teacher educators for member checks and made some requested changes. Second, as authors, we discussed the coding scheme among ourselves and then with a group of teacher educators. To enhance credibility and reach complete agreement, we also involved two independent researchers in the coding discussion to discuss the within-case and cross-case analyses. Third, we used direct quotes from the focus groups in the results section to illustrate and support our findings.

We integrated the quantitative data from the survey and qualitative data from the focus groups for each research question, and compared the answers from pre-service teachers with those of teacher educators.

4 Results

Purpose and value of pre-service teacher inquiry

Table 3.4 displays quantitative results of the survey; it shows that both pre-service teachers and teacher educators regard pre-service teacher inquiry as valuable ($M = 4.4$ and $M = 4.7$, respectively, on the 6-point scale). Among pre-service teachers, 85% provide a positive score on the *Value* scale ($M > 3.5$), including 22% who even

provide a very positive score (M > 5). Similarly, 93% of teacher educators show a positive score (M > 3.5), and 32% are very positive (M > 5). Both groups agree that pre-service teacher inquiry is interesting, enriching, and a good way to professionalize.

The *Future* scale shows lower mean values (3.7 for pre-service teachers, 3.6 for teacher educators); 55% of pre-service teachers indicate intentions to use inquiry competencies in their future profession. From the teacher educators, 45% expect that pre-service teachers will use their inquiry competences in a future job. Compared to the percentages on the scale *Value*, these are very low. Qualitative data are needed to explain this difference.

Table 3.4 Descriptive statistics for *Value* and *Future* scales

PSTs n=355	M (SD)	Positive*	Very positive **	**TEs** n=97	M (SD)	Positive*	Very positive **
Scale **Value**	4.5 (.80)	85%	22%	Scale **Value**	4.7 (.64)	93%	32%
Future	3.7 (.92)	55%	6%	**Future**	3.6 (.68)	45%	1%

Note: Results based on items with 6-point scales (1 = "I fully disagree"– 6 = "I fully agree"). * M > 3.5; ** M > 5.

We sought confirmation and explanation of these survey results from focus group members. To gain insight into the perceived purpose and value of pre-service teacher inquiry, we asked, "Why do you think pre-service teacher inquiry is part of the teacher education program?" The answers from both pre-service teachers and teacher educators are consistent with the findings of the survey: All participants rate pre-service teacher inquiry as important. They went further to detail their thoughts about its purposes, citing inquiry habit of mind or characteristics linked to inquiry habit of mind as critical:

> Why? To develop the inquiry habit of mind; everything is evolving; schools and children learn, and keep changing, also society, now again with those 21st century skills…I think you should always adapt to what the children need and therefore you have to think about what you should adjust. (PST_E4)

We coded this response as applying to an inquiry habit of mind, wanting to innovate, and being critical/reflective. Similarly, the response

> I hope we educate teachers who are (1) open to anything and everything—children, the group … (2) looking for improvement and innovation of education and looking for solutions where there are problems, but also looking at what is going on with the children, and (3) I would like to deliver teachers with a reflective

> and questioning attitude....that they keep asking the question: "What am I doing this for?" (TE_A1)

was coded as having an inquiry habit of mind, being curious, wanting to innovate, and being critical/reflective.

Both pre-service teachers and teacher educators mention various aspects of having inquiry habit of mind: tending to be critical; taking various perspectives; wanting to understand, share, achieve, innovate, and reflect; and being curious. A slight difference between pre-service teachers and teacher educators arises in their perceptions of the value of pre-service teacher inquiry connected to these aspects; when describing having an inquiry habit of mind, teacher educators most often mention being critical/reflective and curious in relation to the value of pre-service teacher inquiry, such as

> We like to educate positive, critical teachers with knowledge who can question their own practice. (TE_C3)

> So, to combine this critical stance with curiosity. (TE_A5)

Instead, pre-service teachers emphasize the quality of wanting to share:

> In your internship you also learn to ask and talk to colleagues. That is also due to that research—the freedom to discuss about education with a colleague. (PST_B1)

> [In reaction to PST_B1]: You also make a shift from intern to colleague. You can get that position earlier through research. (PST_B3)

as well as wanting to achieve and to innovate:

> ...at some point you think that current education doesn't fit with society, doesn't fit with the children anymore or that doesn't fit me anymore; we have learned a way to bring about change. I think that's the most valuable thing there is! (PST_E3)

In addition to developing an inquiry habit of mind, pre-service teachers and teacher educators agree about being able to apply research skills to improve their own educational practice, linking theory and practice, and being empowered:

> They won't follow the methods or school policy slavishly. (TE_B3)
>
> [A teacher educator responds]: We teach our students pre-service teacher inquiry

> to assess their bachelor thinking abilities ….we educate for a complex profession. (TE_A9)

About half the participants in the student focus groups confirm they do not expect to continue conducting research or inquiry in their future jobs. They mention three main reasons: (1) the formal learning process of pre-service teacher inquiry is too time-consuming and difficult, and report writing in particular is a barrier; (2) they are focused on, and looking forward to, teaching, which is their reason for choosing teacher education, so they expect to need all their energy for it; and (3) there is a lack of research culture in most primary schools. Pre-service teachers engage in practice teaching at three or four different schools; most of them mention they have not met teacher colleagues who are undertaking practitioner inquiry. However, they emphasize they would prefer to work at schools with colleagues who show an inquiry habit of mind so they can share experiences and gain practical knowledge:

> Without an inquiry habit of mind, it's not possible to stay up-to-date. The school where I am going to work organizes each week professional development; I like that! (PST_G 2)

Only one focus group of teacher educators failed to reach consensus about the value of inquiry habit of mind to their program. Moreover, the focus group of pre-service teachers at their institute did not have an immediate answer to the "why" question:

> Actually I have no clue why pre-service teacher inquiry is in the program…. I think that is regulated by law or nationally…? (PST_A3)

Pre-service teacher inquiry in the program

We found differences between pre-service teachers and teacher educators in their perceptions of how teacher education programs organize and teach the development of pre-service teacher inquiry competence. Our survey included open questions about the strong and weak points of pre-service teacher inquiry in the program. Most participants who answered these questions indicated one or two points to be strong and one or two points to be weak. The emerging themes of answers were: 1) research skills, 2) teaching-learning-trajectory, 3) inquiry habit of mind, 4) integration of research in all teaching modules, 5) quality of the supervisor, 6) link to practice, 7) knowledge, 8) own topic, 9) too time consuming and 10) miscellaneous.

Both teacher educators and pre-service teachers indicate that a strong point of the teacher education program is that they learn how to conduct research (research

skills). The other answers show differences in opinions between teacher educators and pre-service teachers: Participants from both groups frequently mention the structure of the teaching–learning trajectory in their answers to these open questions. However, one-third of teacher educators identify this as a strong point and more than 40% of pre-service teachers identify it as a weak point. Teacher educators and pre-service teachers also disagree with regard to inquiry habit of mind: 16% of pre-service teachers identify it as a strong point, whereas 10% of teacher educators state it should be improved.

Teacher educators also mention topics other than pre-service teachers. Teacher educators mention integrating research and inquiry in all subjects (e.g., math, science, art, pedagogy); some of them identify it as a strong point (11%), whereas others seek improvements in this integration (16%). Furthermore, some identify miscellaneous points such as internal communication about pre-service teacher inquiry as a weak point, and mention research knowledge of teachers in primary schools as a weakness. Some other teacher educators note tension between the form of assessment in the capstone activity and the nature of inquiry as stance.

Pre-service teachers regard the quality of supervisors as important, identifying it as both a strong (31%) and a weak point (31%) depending on their own experience with a supervisor.

Again, we compared the survey findings with focus group findings. In six of the eight student focus groups, pre-service teachers do not recognize the teaching–learning trajectory; they perceive that they are required to conduct research only in the final part of their teacher education and that they lack preparation. They perceive that they received almost no feedback about their inquiry competencies or writing skills prior to their capstone projects:

> In the educational structure of the program, I missed some things…. We heard that cycle all the time, but it was made practically unusable for me, so I had to do that myself…. I learned the most this year (year 4). (PST_G2)

However, teacher educators perceive a balanced teaching–learning trajectory, from the first year to graduation, as described by the program:

> If you look at the design of pre-service inquiry in the study program, you see that the teaching–learning trajectory has been designed in such a way that it has a logical connection everywhere with the rest of the program: sometimes with the educational theme, sometimes with a subject like math. (TE_G5)

Teacher educators also point out that some of their colleagues are not aware of the entire teaching–learning trajectory or of the requirements of other years or subjects.

Although in the survey pre-service teachers identify inquiry habit of mind as important (i.e., strong point), in the focus group sessions they were not able to identify activities in teacher education that contribute to the development of their own inquiry habits of mind. Instead, they indicated that other aspects of their teacher education and their lives in general (e.g., study periods abroad) are responsible for developing such habits of mind. Yet teacher educators mentioned examples of teaching activities they use to develop students' inquiry habits of mind, such as assignments in which they asked pre-service teachers to observe the inquiry habits of mind of pupils during STEAM (science, technology, engineering, art, and math) classes or give constructive feedback on the research plans of other pre-service teachers.

Analogous to the survey, all student focus group participants mentioned the importance of high-quality supervisors. In their programs, supervision varies between and within institutes, according to the organization, group, or individual format; meeting frequency (from every week to never); and focus (i.e., methodology or subject). Pre-service teachers seem to prefer supervisors with research experience. Although the institutes offer both formal and informal forms of professionalization to supervisors, all pre-service teachers perceive substantial differences in the quality of the supervisors, which in turn directly influence students' motivation and perceived learning outcomes.

Perceived learning outcomes

In both the survey and focus group sessions, we asked pre-service teachers and teacher educators about perceived learning outcomes. From the survey, we analyzed responses to the *Inquiry competence* and *Ease* scales (Table 3.5), as well as answers to open-ended questions about the most important learning outcome. The findings for *Inquiry competence* show that teacher educators and pre-service teachers agree that

Table 3.5 Descriptive statistics of the *Inquiry competence* and *Ease* scales

PSTs n=358	M(SD)	Positive *	Very positive **	**TEs** n=97	M(SD)	Positive *	Very positive **
Scale **Inquiry competence**	5.0(.70)	96%	48%	Scale **Inquiry competence**	4.6(.57)	96%	15%
Ease	2.9(.67)	15%	1%	**Ease**	2.6(.69)	9%	0%

Note: Results based on items with 6-point scales (1 = "I fully disagree" – 6 = "I fully agree"). * M > 3.5; ** M > 5.

students learn how to undertake inquiry projects; in all groups, more than 90% of the ratings are positive (M > 4.6 on the 6-point scale).

With regard to the *Ease* scale, the results for pre-service teachers and teacher educators were the same (M = 2.6), and more than 85% of all respondents regarded pre-service teacher inquiry as difficult. Among focus group participants, pre-service teachers indicated taking pride in successfully completing their pre-service teacher inquiry, for which writing emerged as the most difficult part, leading to feelings of frustration and dislike:

> …and that causes a lot of stress… But the report kept coming back [from the supervisor] … and rewriting again and again … frustrating! (PST_A1)

Nevertheless, students recognize that writing is important in the process of becoming a teacher:

> Also, for example, with the preliminary investigation, you do see things happening, but if you have to draw a conclusion … you have to write something about it, then you start to think better about how that went. And what can I really get out of it. (PST_F4)

Teacher educator participants also link the difficulty level of inquiry work to the pride of the students who complete it:

> No friction, no shine! (TE_B3)

Our analysis of the open question about the most important learning outcome shows that 46% of pre-service teachers (n = 299) mention research skills (Table 3.6):

> …to see how to get a deeper level in inquiry and to use literature in a better way, also for research methods. (PST_D)

Moreover, 40% of pre-service teachers indicate they have gained increased knowledge about the study topic:

> Knowledge about reading comprehension and where to find new information about the topic. (PST_G1)

This knowledge often is combined with application of the findings in practice. About one-quarter of the respondents mention an inquiry habit of mind or related characteristic.

Table 3.6 Distribution of inquiry competencies in answers about the most important learning outcomes

	Knowledge methodology	Knowledge subject	Inquiry habit of mind	Research skills	To apply research
PSTs	12%	**40%**	27%	**46%**	20%
TEs	4%	24%	**70%**	40%	16%

Teacher educators (n = 83) also answered the survey question about most important learning outcomes, and 70% of the answers related to aspects of an inquiry habit of mind, including critical thinking. Furthermore, 40% of these educators mentioned research skills, and 23% identified "the ability to link theory and practice" as most important learning outcome of pre-service teacher inquiry.

The findings from the focus group sessions thus show many similarities in perceptions between pre-service teachers and teacher educators about learning outcomes. Pre-service teachers learn to think deeply, look critically, work systematically, link theory and practice, and feel empowered and proud, because of their achievements. Approximately half the pre-service teachers report they do not expect to conduct research or inquiry ever again, though all are convinced they have become better teachers because of the inclusion of pre-service teacher inquiry in the program.

5 Discussion

This paragraph compares our findings with those of previous research, including the results of a previous study of pre-service teacher inquiry in the *intended* curricula of Dutch primary teacher education (Van Katwijk et al., 2019b).

The first research question focuses on how the purpose and value of pre-service teacher inquiry is perceived. The finding that all participants believe pre-service teacher inquiry is interesting and important, contrast with previous research, in which pre-service teachers and teachers expressed somewhat negative attitudes (e.g., Joram, 2007; Puustinen et al., 2018; Ulvik, 2014). Our findings of positive perceptions may result because pre-service teachers are being proud of their achievements, are feeling empowered, and believe that pre-service teacher inquiry contributes to their quality as teachers; they regard an inquiry habit of mind (e.g., being critical and curious and willing to share and innovate) as the most important purpose of pre-service teacher inquiry. This finding is in line with some prior findings (e.g., Cochran-Smith & Lytle, 2009; Earl & Katz, 2006; Jacobs et

al., 2015) and with the *intended* curriculum of Dutch institutes for primary teacher education(Van Katwijk et al., 2019b).

However, pre-service teachers' perceptions of the implementation of the development of inquiry competence differ from teacher educators' visions and perceptions of how inquiry competence is being taught. First, pre-service teachers do not recognize the teaching–learning trajectory as it is outlined in program descriptions (Van Katwijk et al., 2019b). Some pre-service teachers feel they had to start their capstone inquiry projects without preparation from earlier years; that is, they do not recognize the teaching activities in Healey and Jenkins's (2009) *Research-oriented* quadrant. Teacher educators, in contrast, identify the teaching–learning trajectory for inquiry competences as a strong point of the program, in all four quadrants of the model (Healey & Jenkins, 2009). Authors of previous studies have emphasized the need for discussion and debate within faculties about the role of pre-service teacher inquiry, because the impact of inquiry is limited when it is restricted to only some courses or inconsistently taught (e.g., Cochran-Smith et al., 2009; Munthe & Rogne, 2015; Puustinen et al., 2018; Schulz & Mandzuk, 2005).

Second, pre-service teachers perceive that the program focuses on research skills, whereas teacher educators tend to believe it encompasses a broader inquiry habit of mind. Few pre-service teachers in our study were able to identify teaching activities that had stimulated their inquiry habit of mind, though teacher educators mentioned various examples from own teaching practices. In line with previous studies, teacher educators indicated that they stimulated reflection on the process and outcomes of research and inquiry (Aspfors & Eklund, 2017; Dunn et al., 2008; Reis-Jorge, 2005; White et al., 2016) and emphasized working with critical friends or groups (Dobber et al., 2012; Van der Linden et al., 2012). Van der Rijst, Visser-Wijnveen, Verloop and Van Driel (2013) also refer to differing perceptions between teachers and undergraduate students with regard to the focus of research and inquiry; for students to appreciate the intangible elements of research, such as developing an inquiry habit of mind, teacher educators may need to emphasize those elements in their communications with students. Cochran-Smith et al. (2009) note that pre-service teachers in their study engaged in aspects of inquiry as spelled out in the scoring rubric rather than engaging in inquiry as an integral part of teaching, which is similar to perceptions of teacher educators in our sample. This finding is also in line with the results of our previous document analysis (Van Katwijk et al., 2019b). To achieve constructive alignment, teacher education programs should reconsider their current methods of assessing inquiry competence (Biggs & Tang, 2011).

Third, pre-service teachers in both our survey and the focus group sessions stressed the importance—and shortage—of good supervisors. Although all participating institutes have invested in research and research-supervision professionalization (Geerdink et al., 2016), research-related teaching is rarely based on teachers' own research, which could be stimulating for students (Aspfors & Eklund, 2017; Munthe & Rogne, 2015; Toom et al., 2010). Moreover, teacher educators identified few primary school teachers with research knowledge, which may be causing a lack of coherence in programs (Canrinus et al., 2017).

Our analysis of learning outcomes (i.e., RQ3) shows that both pre-service teachers and teacher educators believe pre-service teachers have learned how to inquire. However, pre-service teachers identify research skills and content knowledge as the most important learning outcomes, whereas teacher educators mention inquiry habit of mind as most important. These findings are in line with the findings of previous investigations of the description of inquiry competence in the Dutch primary teacher education programs, which show that research skills are well described in intended learning outcomes, teaching activities, and assessments, whereas inquiry habit of mind, despite being identified as an important learning outcome, is rarely mentioned in teaching activities or assessment (Van Katwijk et al., 2019b). Both teacher educators and pre-service teachers identify the link to theory and practice as a learning outcome. Aspfors and Eklund (2017), as well as Puustinen et al. (2018) report that pre-service teachers in master programs often have difficulties connecting theory and practice, despite laudable ambitions to establish such connections. The positive perceptions of the bachelor students in this study could be related to the fact that being taught in teacher inquiry is often their first introduction to educational research in the context of a teacher education program that is strongly practice-oriented. This in contrast to university-based teacher education master programs, where students already have a master in a discipline and are familiar with scientific research.

Limitations

Although our study yields interesting and relevant outcomes, it has several limitations. First, all study participants were engaged in primary pre-service teacher education in the Netherlands at the undergraduate level at universities of applied sciences. Therefore, the educational context is specific, and generalizations require caution. Second, our findings arise from self-reports and perceptions of pre-service teachers and teacher educators (e.g., Schwartz, 1999). Survey data related to the *Value*

scale may show a slight social desirability bias, because undertaking pre-service teacher inquiry is a compulsory component of teacher education and therefore may be seen as important. The *Inquiry competence* scale measures whether pre-service teachers are able to undertake inquiry, even though the participating pre-service teachers had graduated and so should be able to do so. We used multiple methods to diminish these biases, verifying the perceptions reported in the survey by asking deeper questions in the focus group sessions. Third, this study is merely a snapshot of a changing system; continued research related to the impact of pre-service teacher inquiry on inquiry-based work and the research culture in primary schools should be longitudinal. Studying the application and development of inquiry competencies of newly qualified teachers over time in particular would be an interesting direction for further research.

6 Conclusions

This evaluation of pre-service teacher inquiry into the Dutch primary teacher education curriculum, canvassing the views of both students and teacher educators, offers positive results overall. Pre-service teachers have positive attitudes toward pre-service teacher inquiry. Cognitively, they believe it is important and useful, and affectively, they think it is an interesting component of teacher education. They also feel, in alignment with teacher educators, that pre-service teacher inquiry is difficult but rewarding. Moreover, both pre-service teachers and teacher educators truly believe they are developing inquiry competence. These findings suggest that the implementation of pre-service teacher inquiry provides valuable training for newly qualified teachers, leading them to have an inquiry stance and conduct inquiry-based work (e.g., Baan et al., 2019; Cochran-Smith et al., 2009).

However, half the pre-service teachers in our study do not expect to undertake inquiry projects in their future jobs, which is similar to results of other studies. The findings of this study show two main reasons for this, that may lead to implications for teacher education in general: The formal way in which pre-service teacher inquiry is taught and assessed should be changed into a clearer teaching-learning trajectory starting in the first year of teacher education, with teaching activities in all four quadrants of the Healey & Jenkins model. Communication about the teaching–learning trajectory could improve so that all colleagues are aware of teaching activities and requirements for inquiry that take place outside their own subjects or years.

Furthermore, explicit attention to the development of inquiry habit of mind is needed, as well as a reconsideration of the current methods of assessing inquiry competences.

Because students experience a lack of a culture of inquiry in most primary schools, more collaboration in inquiry projects between schools and teacher education institutes is desirable. This includes a further professionalization of teachers in inquiry and supervision of inquiry projects, as well as the use of research by teachers in primary schools.

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

CHAPTER 4

Purpose and value of pre-service teacher inquiry; an international comparison

The previous chapter showed positive perceptions toward pre-service teacher inquiry by both pre-service teachers and teacher educators in the Netherlands. To gain a deeper understanding of the purpose and value as well the perceived learning outcomes of pre-service teacher inquiry, Chapter 4 places the previous findings in an international context by comparing Dutch perceptions with those of pre-service teachers and teacher educators in Melbourne, Australia. This study focuses once more on the implemented and attained curriculum. In Australia, where all teacher education is provided by research universities, pre-service teacher research is the common term for the capstone project in which inquiry takes place.

This chapter is based on: Van Katwijk, L., Berry, A., Jansen, E., & Van Veen, K. (2019). "It's important, but I'm not going to keep doing it!": Perceived purposes, learning outcomes, and value of pre-service teacher research among educators and pre-service teachers. *Teaching and Teacher Education, 87*, 102868.

Abstract

Attention to the role of pre-service teacher research in teacher education is growing worldwide. Some countries such as Finland, the USA and Australia have a longer research tradition in teacher education than the Netherlands. This mixed methods study compares the perceptions of teacher educators and pre-service teachers about the purposes, learning outcomes, and value of pre-service teacher research in different contexts. Focus group and questionnaire data from participants in the Netherlands and Australia, identify an inquiry habit of mind as most important, valuable outcome of pre-service teacher research. Although pre-service teachers consider research frustrating and stressful, they acknowledge its value as communication tool and contributor to teacher identity. Yet few of them expect to conduct research in their future jobs.

1 Introduction

Student research in higher education in general, and in teacher education in particular, represents a growing requirement worldwide, largely because research literacy constitutes an important foundation for teachers' professional development (BERA-RSA,2014; Sachs, 2016). To meet twenty-first century education challenges, increase educational quality, and improve national economies, pre-service teachers need to learn how to conduct research (Aspfors & Eklund, 2017; Hökkä & Eteläpelto, 2014; Menter, 2015), which in turn will grant them confidence, skills, and knowledge that will empower them as autonomous educators and also may increase their ability to innovate in their professional careers (e.g., Castle, 2006; Dunn, Harrison, & Coombe, 2008; Reis-Jorge, 2005). As Darling-Hammond (2006, p. 305) explains,

> expectations for teacher knowledge mean that programmes need not only to provide teachers access to more knowledge, considered more deeply, but also to help teachers learn how to continually access knowledge and inquire into their work.... Preparing teachers as classroom researchers and expert collaborators who can learn from each other is essential.

A range of concepts in teacher education curricula have been designed to serve the concept of continuous professional renewal by educating students in the interpretation, execution, and use of research (Cooney, Buchanan, & Parkinson, 2001). By conducting research and practicing with a range of data-gathering methods, these students, or pre-service teachers, should be able to transfer into evaluative teaching practices more seamlessly (Dunn et al., 2008). However, the role of research in teacher education programmes is not yet clear and concepts such as research-driven, research-based, and inquiry-oriented, tend to be poorly defined or used interchangeably (Aspfors & Eklund, 2017; Gleeson, Sugrue, & O'Flaherty, 2017; Munthe & Rogne, 2015). Toom et al. (2010) suggest that research-based teacher education entails the study of research methods, conducting research, and writing a master's thesis (Hökkä & Eteläpelto, 2014; Maaranen, 2009), which in turn creates autonomous, reflective teachers who can base their pedagogical decision making on a theoretical foundation. By developing their knowledge of practice through research, pre-service teachers may "be empowered to make advancements in their professional, educational, and service provision" (Kilderry, Nolan, & Noble, 2004, p. 25). Research-oriented units in pre-service teacher education programmes accordingly may generate respect for the value of research and increase students' ability to evaluate research evidence more critically

(Dunn et al., 2008). This paper focuses on pre-service teachers conducting research related to becoming a teacher, including literature reviews and research proposals, to demonstrate their knowledge of the content and methods of educational research.

In many teacher education institutes worldwide, including bachelor's as well as master's programmes, engaging with research, that may include learning to read and interpret published educational research or actually conducting research is a compulsory component (Dunn et al., 2008; Griffioen & de Jong, 2015; Van der Linden, Bakx, Ros, Beijaard, & Van den Bergh, 2015). However, while teacher educators endorse the need for pre-service teachers to engage in such research activities, many pre-service teachers seem to resist this component of their degree requirements (e.g., Krokfors et al., 2011; Ulvik, 2014; Van der Linden et al., 2015). Joram (2007) identifies one reason for this situation as emerging from clashing epistemologies between pre-service teachers and their educators, whereby educators typically consider research-based findings important for their students to learn, while pre-service teachers are not interested in this type of evidence and only want to learn how to teach, with the claim that "specific skills of teaching are the most important thing they should be learning" (p. 131). Other research affirms that pre-service teachers believe that conducting a research project takes time away from more practical aspects of the curriculum (Dunn et al., 2008). Pre-service teachers tend to be strongly influenced by the practicing teachers whom they meet during their in-school placements, and those practicing teachers often have little experience with conducting research, such that they may express apathetic or negative attitudes toward it (Dunn et al., 2008; Munthe & Rogne, 2015; Rinke & Stebick, 2013). Several studies conducted in Finland, where conducting research is required for bachelor's and master's theses, report that teacher candidates appreciate the research-based approach (Byman et al., 2009; Jyrhämä et al., 2008; Munthe & Rogne, 2015). However, Puustinen et al. (2018) conclude that even if pre-service teachers recognize the programme goal to create "teachers as researchers," they are sceptical of the relevance of this goal for the teaching profession and do not always recognise a link between theory and practice. Newly qualified teachers in Finland and pre-service teachers in Norway find conducting research problematic, in that it interferes with their practice periods, due to time constraints (Ulvik, 2014), and they have difficulty identifying applications of research activities in their daily practice (Aspfors & Eklund, 2017).

Despite increasing attention to pre-service teacher research in teacher education programmes, reflecting its potential impact on improving teacher quality and stimulating lifelong learning, resistance and negative attitudes toward research

persist (Munthe & Rogne, 2015; Puustinen et al., 2018; Rinke & Stebick, 2013). Many reports rely on existing assumptions about the purpose and value of pre-service teacher research; few empirical studies explicitly investigate what teacher educators and pre-service teachers perceive as the purpose, value, and learning outcomes of such research requirements in teacher education programmes. Therefore, the aim of this study is to investigate the contributions of pre-service teacher research to the professional learning and development of pre-service teachers, by gathering insights into their perceptions and those of teacher educators of the purposes, learning outcomes, and value of pre-service teacher research.

Specifically, this comparative study analyses key stakeholders' views of pre-service teacher research, required in teacher education programmes in four institutes across two countries (the Netherlands and Australia). This work responds to Darling-Hammond's (2017) call for educators from various countries, with their different contexts, to learn from one another about what matters and what works to meet the high expectations of learning for pre-service teachers and their students. Accordingly, two educators, one from Australia and one from the Netherlands, worked together to build a deeper understanding of the value of pre-service teacher research by comparing the perceptions of both educators and pre-service teachers in different contexts, using both focus groups and questionnaires.

2 Nature of pre-service teacher research

To obtain a clear definition of pre-service teacher research, we first outline its purpose, as described in prior literature. Then we integrate practitioner research and inquiry as examples of teacher research, which are generally consistent with the expectations of pre-service teacher research (Cochran-Smith, Barnatt, Friedman, & Pine, 2009).

A rich body of research that describes the nature and meaning of teacher research (e.g., Cochran-Smith & Lytle, 2009; Elliott, 2004; Kemmis, 2009, 2010; Smith et al., 2009; West, 2011; Zeichner, 2003) distinguishes three major goals: (1) innovation, with a focus on one's own teaching practice or school issues; (2) contribution to the content knowledge of educational research, by filling gaps between research and teaching and transferring and integrating research into complex problems and one's own practice (Hammerness, 2006); and (3) professional development. Teacher research also might contribute to lifelong learning efforts, because it implies continuous

revitalisation and renewal of teaching practices (e.g., Cochran-Smith & Lytle, 2009; Day, 1999; Elliott, 2004).

In turn, practitioner research - or practitioner inquiry- "refers to a variety of educational research modes [..], including action research, teacher research, narrative inquiry, [..]and the use of teaching as a context for research" (Cochran-Smith et al., 2009, p.18). It takes an insider perspective, unlike conventional education research (Cochran-Smith et al., 2009), such that it is more closely linked to professional development. Practitioner research aims to understand and improve practices within the teacher's own, local context (Borko, Liston & Whitcomb, 2007). Although practitioner research mostly has served professional learning purposes, it offers a range of potential outcomes, such as increasing teachers' knowledge and understanding of students (Butler & Schnellert, 2012; Jacobs, Yendol-Hoppey, & Dana, 2015; Levin, 2013; Rinke & Stebick, 2013), improving teaching practice (Ermeling, 2010; Levin, 2013), and fostering teacher empowerment and transformation (Esposito & Smith, 2006; Merino & Holmes, 2006). Learning how to conduct practitioner research also can lead to a more critical, reflective habit of mind, increase understanding of scholastic culture, support adaptations of teaching to pupils' needs, encourage innovative methods, and prompt participation in professional learning communities (Cochran-Smith & Lytle, 2009; Dobber, Akkerman, Verloop, & Vermunt, 2012; Zeichner & Noffke, 2001).

For this article, we focus on pre-service teacher research as a form of practitioner research; the pre-service teacher is a practitioner, who uses intentional, systematic methods and a specified learning strategy to inquire into and improve his or her own practice (Cochran-Smith et al., 2009), ideally driven by curiosity and knowledge of some educational problem in a particular context (Jacobs et al., 2015). For teacher education, practitioner research represents a professional learning strategy, in the context of becoming a teacher, that aims to focus pre-service teachers explicitly on setting and achieving goals for student learning and underpinning their own practice with scientific knowledge (Dana & Yendol-Hoppey, 2014). The presentation of pre-service teacher research in teacher education settings varies from programme to programme, as Munthe and Rogne (2015) show in their review of pre-service teacher research in Finland, Norway, the United States, and Scotland.

3 Framework of the study

We examine pre-service teacher research in two country contexts, the Netherlands and Australia, chosen because of their similarities in qualification level (i.e., Australian Qualifications Framework 2013, p. 51; European Union, 2016; Vereniging Hogescholen, 2016), standards for teacher education (Australian Institute for Teaching and School Leadership, 2011; Onderwijscoöperatie, 2014), curricula, and learning outcomes for pre-service teacher research (as reflected in handbooks and programme descriptions of the participating institutes that we reviewed in 2016). The participating institutes in the Netherlands list the following goals for pre-service teacher research: an inquiry habit of mind, knowledge about and use of educational research, and skills to conduct research. Similarly, knowledge and skills to understand and conduct educational research are the main objectives of the pre-service teacher research projects in the Australian institutes. In all cases, the pre-service teachers must write a literature review and a research proposal, before collecting data and writing a report. In both countries, the research projects also are connected to practice.

On the basis of prior literature (e.g., Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015) and the aforementioned goals and knowledge areas for pre-service teacher research, we distinguish four main aspects of pre-service teacher research:

1. Research knowledge, or a broad understanding of a body of knowledge about education and research, as well as underlying theoretical concepts (e.g., Dana & Yendol-Hoppey, 2014; Jacobs et al., 2015; Munthe & Rogne, 2015; Sachs, 2016). Aspfors and Eklund (2017) describe this aspect as an element of research competence.

2. An inquiry habit of mind, defined by Earl and Katz (2006) as a way of thinking to gain profound understanding, being reluctant to conclude, tolerating contradictions, looking from different perspectives, and continuously asking questions. Cochran-Smith and Lytle (2009) refer to it as "inquiry as stance," which includes being open to learn from one's own professional environment, as well as a fundamentally critical attitude. Van der Rijst (2009), whose work is regularly cited in Dutch higher education policy, articulates six characteristics of an inquiry habit of mind: a tendency to be critical as well as wanting to understand, to share, to innovate, to know, and to achieve.

3. Applying research in practice, which Earl and Katz (2006, p.18) cite as being capable of "evidence-informed decision making" that requires not conducting research per se but rather making use of data available in previously published research (Van Veen et al., 2010). Aspfors and Eklund (2017) also mention "research-related teaching."

4. To conduct research, using skills such as analysing a problem related to practice, undertaking a literature review, formulating a research question, choosing and using research methods, collecting and analysing data, drawing conclusions, and writing a research report (Aspfors & Eklund, 2017; Hökkä & Eteläpelto, 2014; Munthe & Rogne, 2015).

With the exception of some studies of research-based teacher education in Finland (e.g., Aspfors & Eklund, 2017; Jyrhämä et al., 2008; Krokfors et al.,2011; Puustinen et al., 2018) and Reis-Jorge's (2005) contribution, few studies empirically investigate how teacher educators and pre-service teachers perceive and value pre-service teacher research. Moreover, recent findings suggest some ambiguous views among pre-service teachers (Puustinen et al., 2018). Therefore, the current study seeks to address the following research questions, applying the four main aspects of pre-service teacher research identified above, as a framework.

How do pre-service teachers and educators from Australia and the Netherlands perceive:

1. the purposes of pre-service teacher research?
2. the learning outcomes of pre-service teacher research?
3. the value of pre-service teacher research in teacher education programmes?

4 Method

4.1 Study design

We used a mixed methods approach, with emphasis on the qualitative data collected in focus groups with additional data from questionnaires, which are complementing as well as confirming (Small, 2011). This combination of qualitative and quantitative approaches provides a more complete understanding of the research problem than either approach alone (Creswell, 2014, 2016).

We used a comparative, multiple-case replication design, with eight cases: Four cases from Australia and four from the Netherlands. The cases consisted either of pre-service teacher or teacher educators. We believed two x four cases to be literal replications, such that we predicted similar results (Yin, 2014), due to their similarities in focus, structure, and culture, in terms of pre-service teacher research across the four Dutch cases and the four Australian cases. However, acknowledging the aforementioned differences, we also considered the Australian and Dutch cases theoretical replications and predicted some contrasting results. In line with prior studies (e.g., Joram, 2007; Munthe & Rogne, 2015; Puustinen et al., 2018), we also expected differences in perceptions between teacher educators and pre-service teachers. We have chosen for focus groups to gain a deeper understanding of the various perceptions of and experiences with pre-service teacher research, because semi-structured focus group interviews can provide insights into how people think (Puchta & Potter, 2004). The group interactions among members encouraged participants to speak candidly and make connections with various concepts through discussions, which might not have occurred during individual interviews (Vaughn, Schumm, & Sinagub, 1996). The questionnaire was meant supplementary and served four purposes: (1) to prepare participants for the content of the focus group, (2) to compare individual answers of participants, (3) to compare individual answers with the answers gathered in the focus group, and (4) to take along perceptions from eleven pre-service teachers, who were not able to attend the focus group (see Table 4.1).

4.2 Institutes and participants

We invited four institutes of teacher education to participate in this study: two from Melbourne, Australia, where the first two authors collaborated and the second author resides, and two from the Netherlands, the home country of the first and last two authors. In all four participating institutes, pre-service teacher research is a substantial requirement, accounting for 17%–25% of the credits of the final year of the teacher education course to meet graduation requirements. In all these institutes, the final research project is connected to the professional experience or practicum and divided in two parts: the first focused on writing a research proposal, including a literature review, and the second dedicated to the collection of data and writing and presenting the research.

The programme descriptions published by the four institutes also reveal some differences. The Dutch students spend more time in school than the Australian students. In their final year, the Dutch pre-service teachers teach their own student

group autonomously, for three days a week for 20 weeks, and during this period, they also spend an additional day in the school for their pre-service teacher research. In contrast, the Australian pre-service teachers spend three to six weeks full-time in the school, combining teaching and data collection efforts. All descriptions of pre-service teacher research in the participating programmes emphasise to conduct research most out of the four main aspects, mentioned in the theoretical framework. Characteristics of an inquiry habit of mind are mentioned explicitly in the Dutch programmes, while in the Australian programme this aspect gets less attention.

We invited teacher educators from the four institutions to participate. These informants were directly involved in teaching, supervising, or designing the programme for pre-service teachers that included a component of pre-service teacher research in the final part of the teacher education course. All twenty-six educators, directly engaged with pre-service teacher research in the four institutes, agreed to join the study, by participating in the focus groups (see Table 4.1). The participating teacher educators in each institute invited pre-service teachers to participate in this study about pre-service teacher research, requiring that they were in the final part of their initial teacher education and had finished their pre-service teacher research course requirements. We requested to use no other selection criteria. Information about the amounts of invited pre-service teachers is not available. Seventeen pre-service teachers across the two countries participated in the focus groups (Australia = 6; Netherlands = 11) and another eleven pre-service teachers across the two countries, who were not able to join the focus groups due to the planned times

Table 4.1 Methods and number of participants.

Focus	Method	Australia	The Netherlands
		Case AU 1 & AU 2	Case NL 1 & NL 2
Perception TEs	Focus group	AU 1: 5 TEs	NL 1: 7 TEs
		AU 2: 2 TEs	NL 2: 12 TEs
	Questionnaires	AU 1: 3 TEs	NL 1: 6 TEs
		AU 2: 2 TEs	NL 2: 6 TEs
Perception PSTs	Focus group	AU 1: 3 PSTs	NL 1: 8 PSTs
		AU 2: 3 PSTs	NL 2: 3 PSTs
	Questionnaires	AU 1: 6 PSTs	NL 1: 8 PSTs
		AU 2: 10 PSTs	NL 2: 4 PSTs

Note: TEs = teacher educator; PSTs = pre-service teachers.

of the meetings, completed the questionnaire. Table 4.1 provides a summary of the study methods and numbers of participants in the eight cases. All educators and pre-service teachers participated voluntarily and gave informed consent. Throughout this article, we use pseudonyms for all participants.

4.3 Data collection

4.3.1 Focus groups

In each of the four institutes we organised one focus group interview with the teacher educators and one with the pre-service teachers (see Table 4.1 for the number of participants). We started each of the focus groups with an explanation of the study, an overview of the theoretical background, and the meaning of a focus group. Participants were invited to introduce themselves and, in case of the pre-service teachers' focus groups, each participant briefly explained the topic of their own teacher research. The central question for discussion in the focus groups was: "Why do you think pre-service teacher research is part of your programme of initial teacher education?" In the Dutch focus group of teacher educators with 12 participants, we invited each participant to first make some notes about their own perceptions before the collective oral exchange. During discussions of the central question in the focus groups, we directed the conversation toward participants' perceptions of the purpose of pre-service teacher research (RQ1). To prompt statements about learning outcomes (RQ2) and the value of pre-service teacher research (RQ3), we either relied on the initial, central question or asked other, in-depth questions, such as "What did you learn from conducting research?" with gentle follow-up probes, such as "Why do you think so?" to fully explore participants' ideas. In all focus groups, we emphasized that we would prefer a discussion rather than question and answer session, and that the participants should not hesitate to voice their possible different viewpoints.

We held these focus groups in the Netherlands in June 2016 and in Australia in November 2016. The focus groups with pre-service teachers lasted approximately one hour, whereas those with teacher educators averaged one and a half hours. We video recorded, transcribed, and analysed all focus groups with the help of Atlas.ti. To establish consensus, the first three authors discussed the coding of the Australian focus groups. After general consensus was reached, the codes were applied to the Dutch transcripts correspondingly.

4.3.2 Questionnaires

One week before each focus group, all participants received a questionnaire that contained items asking about their perceptions of pre-service teacher research. All pre-service teachers in the focus groups completed the questionnaire. Nine participating educators (35%) did not complete the questionnaire, because of a lack of time.

The questionnaire is based on a validated Dutch instrument (Mathijsen, Joosten-ten Brinke, Krol, Kools, & Bolhuis, 2012), developed to evaluate the attitude of pre-service teachers toward student research. This instrument refers to four broad perceptions: (1) attitudes toward pre-service teacher research (14 items), (2) the perceived purposes of pre-service teacher research (5 items), (3) the perceived ability of pre-service teachers to conduct research (6 items), and (4) the expectation that pre-service teachers will conduct research in their future profession (7 items). Twenty-six percent of the items were negatively formulated and therefore reverse scored, for example: "Conducting research is a compulsory component of the degree programme but I do not understand how it is useful for a teacher"

For RQ1, we used measurement items from the second area; for RQ2, we relied on the efficacy items from the third category. Finally, for RQ3, we linked seven attitude items from the first area with four items about future predictions from the fourth area, as well as four other items (e.g., "Research fits naturally into the work of a teacher"). The instrument provides six-point Likert scales, so participants must choose positive or negative responses (i.e., fully disagree to fully agree). Three open questions also asked about the most important learning outcome, the value of pre-service teacher research, and other terms that come to mind about conducting research.

4.4. Data analysis

We began this study with within-case analyses, observing consistency in the formulation of the purposes for pre-service teacher research, according to the results from both the focus groups and the questionnaires. The questionnaires were meant to provide additional data and low numbers led us to use only descriptive statistics in SPSS. Next, we conducted cross-case analyses to enhance the generalizability of our findings about the perceived purpose, learning outcomes, and value of pre-service teacher research, as well as to look for potential transferability to other contexts (Miles, Huberman, & Saldana, 2014).

In the exploration phase of the analysis, we started inductively and separately coded quotes related to the purpose, learning outcomes, and value. For example,

we applied a "value" code when direct quotes explicitly mentioned value, as well as to answers to the question "What do you think about pre-service teacher research?" or perceptions not directly related to the purpose or learning outcome, such as the following excerpt: "It was a way to connect on a professional level and she [the mentor teacher] was able to see what kind of a learner I am and what I am interested in" (PST AU1).

For the cross-case analysis, we used a replication strategy (Yin, 2014), beginning with two Dutch cases from the same institute; one case with pre-service teachers and one with teacher educators. Then we examined the other six cases to look for similar and different patterns in perceptions of purposes, learner outcomes, and value of pre-service teacher research, ultimately ending with a list of codes related to one or more of the cases. In the second cycle, we refined our pattern codes by using the code co-occurrence tool and various codes from primary document tables in Atlas.ti (Friese, 2014) to look for similarities and differences and address the research questions. Subsequently, to connect our data with prior literature, we moved from an inductive case-oriented approach to a more deductive, variable-oriented approach (Miles et al., 2014), using the four aspects related to pre-service teacher research: (1) research knowledge, (2) inquiry habit of mind, (3) applying research in practice, and (4) conducting research. We analysed the qualitative data from the focus groups and quantified them to a certain extent, to be able to "discern and to show regularities or peculiarities in the qualitative data we might not otherwise see, or to determine patterns or idiosyncrasy" (Sandelowski, 2009, p. 210). We calculated the relative frequencies of the codes referring to purposes within the cases, to specify the distribution of attention to various purposes of pre-service teacher research in the focus groups. We acknowledge the limitations of these "quasi-statistics" (Becker, 1990) but regard such quantitative information as a necessary complement to the qualitative information gathered from the data (Maxwell, 2010). First, the quantitative information about percentages of code frequencies increases internal generalizability and comparability between the focus groups with different numbers of participants; second, with these quantitative data, we can identify and characterize diverse perceptions in the groups/cases studied; and third, we can show that we were not "cherry-picking our data for instances that support our interpretations" (Maxwell, 2010, p. 478). Finally, we analysed similarities across all cases and sought to explain the differences, using quotes from the participants, the case contexts, and our theoretical background.

5 Results

We present the results, according to our study design (Table 4.1) and research questions. That is, we start by describing the cross-case analysis of the perceived purposes (RQ1), followed by the attained learning outcomes (RQ2). We end with findings about the value of pre-service teacher research (RQ3). The similarities between pre-service teachers and educators within each country are greater than the similarities between countries. Therefore, we merged the quantitative data from the Australian institutes, and then the quantitative data from the Dutch institutes.

5.1. Perceived purposes of pre-service teacher research

Perceived purposes in focus groups

The key question in the focus groups was: "Why do you think pre-service teacher research is part of your programme of teacher education?" We also asked participants to elucidate what they thought to be the most important purpose/s of pre-service teacher research. Table 4.2 categorizes their answers according to the four aspects of pre-service teacher research we described earlier (research knowledge, inquiry habit of mind, applying research in practice and conducting research), as well as some other mentioned purposes. Most focus group responses about the purpose of pre-service teacher research match the four purposes mentioned previously. For example, responses such as "to solve problems," "to connect theory and practice,"

Table 4.2 Perceived purposes of pre-service teacher research (percentages, based on number of codes).

	Teacher educators		**Pre-service teachers**		TOTAL # codes about purpose
	AU *N*=7	NL *N*=19	AU *N*=6	NL *N*=11	
Inquiry habit of mind	**28%**	**32%**	**24%**	15%	60
To apply research in practice					47
· To improve own practise	12%	10%	**19%**	4%	25
· To connect theory and practice	9%	5%	5%	6%	15
· To solve problems	0%	5%	0%	6%	7
To be able to conduct research	12%	16%	**19%**	**23%**	39
To gain research knowledge	13%	7%	5%	0%	16
Other:					
· To use it as a learning strategy	**18%**	4%	14%	**25%**	33
· To innovate education	4%	**18%**	12%	8%	25
· Academic qualifications	4%	3%	2%	13%	12
Total # codes	100% 68	100% 74	100% 42	100% 48	232

Note: The percentages of the two most frequent mentioned purposes per case are in **bold.**

and "to improve own practice" fit the purpose of applying research in practice. Some answers did not connect with any of the four aspects but still seemed relevant for the perceived purpose of pre-service teacher research, such as "to use it as a learning strategy," "to innovate education (incl. to construct knowledge)," and "for academic qualifications."

In general, the similarities in perceived purpose among teacher educators across the four institutes are high. An inquiry habit of mind (or its synonyms) is mentioned most frequently, sometimes combined with the purpose of connecting theory and practice. For example, Ethan (TE AU2) explained, "I think the research project and the inquiry nature of it … deepened their thinking. I think that might stay with them in practice." Similarly, Jan (TE NL1) noted, "It's a great tool to connect theory and practice. To push students into a thinking mode. The critical disposition is very important." In the focus groups, the educators and pre-service teachers rarely mentioned gaining research knowledge as a purpose, with the exception of a few educators from Australia. The pre-service teachers noted that they use it as a learning strategy and mentioned being able to conduct research, but they pointed to an inquiry habit of mind as the most important purpose. For example, Jack (PST AU2) reflected, "The main purpose? It's supposed to give us a critical thought process what we do as teachers." Similarly, Els (PST NL1) noted the most important purpose was "to learn to look critically and to take a step backwards."

An interesting difference between the educators of the two countries is that the Australian educators mentioned that pre-service teacher research is designed to be a learning strategy; for example, Ella (TE AU2) commented: "What I wanted – hoped – this project would do is to give people the opportunity to bring together some aspects of the programme in a way that helps them to move forward. And thinking about this move forward, they might use some of it into their teaching itself." In contrast, Dutch educators aimed to innovate in education through pre-service teacher research, such as when Roel (TE NL1) expressed "that schools notice the value of practitioner research. We would like to develop learning communities with teacher educators, pre-service teachers and teachers who deal with research questions and burning issues connected to the school practice. Innovative."

Perceived purposes in questionnaires

In the questionnaires, respondents provided their perceptions of the purposes of pre-service teacher research. As Table 4.3 shows, responses to the questionnaire items related to perceived purposes all show a mean of 4.2 or higher on the six-point

Likert scale. That is, educators and pre-service teachers both acknowledge the cited purposes of pre-service teacher research.

Table 4.3 Responses to "What do you think about pre-service teacher research?" (*Means* in six-point Likert scale, 1 = "I fully disagree" to 6 = "I fully agree").

Pre-service teacher research	Teacher educators		Pre-service teachers	
	AU *N*=5	NL *N*=12	AU *N*=16	NL *N*=12
.. helps students acquire systematic insight into practical problems	5.0 *SD*=0.8	5.2 *SD*=0.8	5.3 *SD*=0.7	5.0 *SD*=0.6
.. is a good way to increase their level of professionalism	4.5 *SD*=1.3	5.0 *SD*=0.7	5.2 *SD*=0.8	4.8 *SD*=0.6
.. is a good way to improve pedagogical skills	5.0 *SD*=1.2	5.3 *SD*=0.7	5.2 *SD*=0.8	4.8 *SD*=0.9
.. is a good way for students to demonstrate that they have acquired bachelor/master level skills	4.4 *SD*=0.9	4.8 *SD*=0.7	4.3 *SD*=1.2	4.5 *SD*=1.0
.. increases the student's inquiry habit of mind	5.0 *SD*=1.0	4.3 *SD*=1.1	4.9 *SD*=0.7	4.6 *SD*=0.9
Conducting research is a compulsory component of the degree programme but I do not understand how it is useful for a teacher*	4.2 *SD*=0.8	5.3 *SD*=0.9	5.0 *SD*=1.1	4.6 *SD*=1.3

Note: * = reversed scored

5.2 Perceived learning outcomes

Perceived learning outcomes in focus group

In the focus groups, both Dutch and Australian pre-service teachers clearly identified a range of learning outcomes gained from conducting research. The Dutch pre-service teachers mainly mentioned aspects that have to do with conducting research, such as writing a proposal and using a research cycle. Both Australian and Dutch pre-service teachers emphasized how much and what they have learned regarding an inquiry habit of mind, as illustrated in the following excerpt from a focus group with pre-service teachers from AU1, in which Zoe and Lilly describe looking more critically at practice and the drive to improve their own practice:

> Zoe: "I just know that, when I go into a classroom, I can't stop my mind thinking. I think all the time things like: why is she doing that, I would have done it like this, I wonder if this is a different approach. I feel, after I have done this [research] course, I can't go into a classroom without trying to improve things."
>
> Lily acclaims: "Yes!"
>
> Interviewer: "Because of this research course?"

Both pre-service teachers: "Yeah, pretty cool."

Lily: "Critically think…."

Interviewer: "And that wasn't before?"

Zoe: "No."

Lily: "Well I think it was there before, but now we've got more knowledge, more tools. This went more in depth."

Joost, a Dutch student (PST NL1), mentioned similar learning outcomes: "I did this pre-service teacher research to tick the last box, to graduate, but I know I have learned a lot! For example, this inquiry habit of mind. I have become a better teacher, because I have conducted research; I think more critically."

Perceived learning outcomes in questionnaires

Both educators and pre-service teachers reported a range of learning outcomes in the questionnaires and focus groups. One area of the questionnaire was devoted to the perceived ability of pre-service teachers to conduct research (α= 0.77). All questionnaires completed by the educators from both the Dutch and Australian institutes (N = 17) reveal high scores in this area, with a mean of 4.4 (*SD* = 0.63). These educators believe students have learned to design and conduct practitioner research. They express positive ideas about the experienced learning outcomes of pre-service teachers in terms of their use of practical knowledge as a teacher, gained through their research. The questionnaires completed by pre-service teachers (N = 27) reveal very high scores on their perceived ability to conduct research (α= 0.87), with a mean of 5.0 (*SD* = 1.1) on the six-point scale.

In terms of the most important learning outcome, the pre-service teachers' answers to the open question revealed several aspects related to how to conduct research, linking theory to practice, and an inquiry habit of mind, such as "learning how to be a reflective teacher" (PST AU) or "learning to be open-minded, without a tunnel vision" (PST NL). Multiple educators offered similar responses, including "to gain an understanding of the connection between theory and practice" or "to develop a critical disposition."

5.3 Perceived value of pre-service teacher research

Perceived value in focus groups

In the focus groups, pre-service teachers and educators explained why they thought pre-service teacher research was valuable. We can distinguish two main categories of value in these responses: as a tool for professional development and for empowerment. All participants identify pre-service teacher research as an adequate tool for professional development. For example, Ethan (TE AU2) explains, "I think a lot of them have actually never done something like this before. Learning by action. This is sort of what's learning's all about. Doing this and how exciting it is (that's why we all do it). And how that can sustain your professional work like teaching." Others regard pre-service teacher research as a professional development tool, not just for the pre-service teachers but for their mentors too. Ella (TE AU2) reveals, "Then it feels as a false idea about promoting research, … and research-led things and evidence based and all that talk around that…. Research seems to be restrictive rather than expansive and so I wanted to have that teachers perceived the research that our students were doing, compared to their own experiences that they got an idea what research does, or is not, or what is possible." Some even note benefits for the teacher educators, as evidenced by Kees (TE NL 1): "If we start communities of learners about research, we can improve practice on the schools and feed our own professional development as well. That is our dream!"

Several responses from both educators and pre-service teachers identify empowerment as a second important perceived value of pre-service teacher research. For example, Andrew (TE AU 1) talks about a specific form of empowerment, namely, the ability to question standard procedures: "When I first started as a teacher educator, I thought that students didn't need to do or know too much research, they need to learn how to teach! Now, I am of the view that if we don't start helping them understanding the importance of research … then at the time they learn to teach … they will be all replicating the system, and that's not what we want." Similarly, Bram (TE NL 1) notes: "I can see the just-graduated students: embracing uncertainties with experience. They now do have the choice not to follow standards and methods slavishly." Zoe (PST AU 1) affirms this sentiment: "It stops teachers of getting into this rut of staying the same, 'This is the way that we've always done it!' … Now what we've got are basic tools, we're able to conduct research … so I can provide it to the school and give a better example." None of the pre-service teachers use the term empowerment specifically, but they clearly refer to it; for example, Loes (PST NL 2) comments: "It's an eye-opener to look at different perspectives of one problem and think how I should …

use theoretical concepts. It develops my opinion and passion about [my] own topics!"

Both educators and pre-service teachers also mention a value of the pre-service teacher research that they experienced *during* the project, in that it provides a valuable communication tool. Chloe (TE AU1) explains: "It was also valuable, they [pre-service teachers] felt that they had to talk with teachers and principals about this research project. It made them feel that they had something to offer." Both Dutch and Australian pre-service teachers confirm this notion. As Els (PST NL 1) says, "Through the pre-service teacher research, I made a change from student teacher to colleague." Zoe (PST AU1) also notes, "It was a way to connect on a professional level and she [supervising teacher] was able to see what kind of a learner I am and what I am interested in."

Surprisingly, both Australian and Dutch pre-service teachers also indicate that they did not expect to conduct research in their future jobs — at least not in the way they learned during their teacher education course. As Lily (PST AU1) explains, "I don't want to go to a school where I have to do a research [project]. Then it will be a bit too much pressure." Zoe (PST AU1) adds: "Not this formal way, but I would like a kind of reflective practise about my own teaching in some areas to improve it." All the participating pre-service teachers in NL1 agree that they learned a lot and believed they were better teachers because of the pre-service teacher research, but none of them thought they would conduct research formally in the future. According to Pien, (PST NL1) "I would never conduct research again the way we did in teacher education," though Els (PST NL1) acknowledges, "I would like to work with colleagues with an inquiry habit of mind though and to share findings."

When we asked, "What makes pre-service teacher research in the programme valuable?" all the pre-service teachers mentioned the connection to practice. That is, pre-service teacher research is valuable because it is a way to learn to connect theory and practice. In the Netherlands, more assignments in initial teacher education link directly to the pre-service teachers' own practice than in the Australian institutes, but all participating pre-service teachers still appreciate the link between the pre-service teacher research and their practice.

Most educators and pre-service teachers consider pre-service teacher research a valuable part of teacher education because they were allowed to choose their own topics, in which they were interested, which encouraged the development of their teacher identity. For the Australian students, these units were the first in which they had influence over the content. Zoe (PST AU1) explains, "It's important that we could choose our own topics, because we can also use it for job interviews. This is who I am.

This is where I'm into and this is a proof; there's a whole thesis on it." Correspondingly, Nel (PST NL2) mentions, "Because we could choose our own topic, I was curious…. Then, you can get the best out of yourself and show the school who you are as a teacher and as a researcher."

Perceived value in questionnaires

In the questionnaire for pre-service teachers, 15 items were linked to perceived value ($\alpha = 0.87$), and the results reveal that they express positive attitudes toward pre-service teacher research; the mean is 4.4 ($SD = 0.63$) on the six-point scale. However, 9 of the 28 respondents do not agree with the statement, "I find conducting research to be fun." Five items linked to the future ($\alpha = 0.79$), such as "I would really like to conduct research in my future job as a teacher," also evoked positive perceptions. The mean was 4.0 ($SD = 0.94$), though two Dutch and two Australian pre-service teachers scored 1 or 2 on these items.

For the open question about the value of pre-service teacher research, 10 of the 28 pre-service teachers completed it, offering answers that contained words such as "useful," "very important, to improve practice," and "crucial." One Australian pre-service teacher wrote: "Research is an integral component of any profession, particularly in such a complex field as education" (PST AU2). The educators also indicated, in their responses to this open question, the value of pre-service teacher research, explaining the need for pre-service teachers to "see the link between practice and theory, the importance of inquiry, research and action" (TE AU1) and "That they think before they do, and ask critical questions to people and literature" (TE NL1).

Finally, the last open question ("Are there other terms, related to conducting pre-service teacher research, that come to mind? If so, which?") prompted responses from half of the pre-service teachers, who offered answers such as "frustrating," "stressful," "exhausting," and "indifferent," but also "helpful," "insightful," and "mind-opening." Thus, not all answers were thoroughly positive. As one educator wrote: "Without friction, no shine!" (TE NL1).

6 Discussion and conclusion

With this study, we sought to gain insight in the role of pre-service teacher research by mapping the perceptions of pre-service teachers and teacher educators in two different country contexts, reflecting on the purposes, learning outcomes, and value

of pre-service teacher research. We mapped these perceptions against four aspects of pre-service teacher research derived from prior literature (e.g., Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015): (1) research knowledge, (2) inquiry habit of mind, (3) applying research in practice, and (4) conducting research. All the pre-service teachers and educators in the investigated contexts stated their belief that an inquiry habit of mind is the main purpose of pre-service teacher research even though this aspect is not explicitly described in the Australian programmes. This finding is in line with Cochran-Smith and Lytle (2009), who cite the importance of a fundamentally critical attitude and an open mind to learn from one's own professional environment. We acknowledge that pre-service teachers in other institutes, involved in a programme that is just focused on research knowledge, might not have mentioned characteristics of an inquiry habit of mind as a main purpose.

Other important purposes that pre-service teachers mentioned were "to be able to conduct research" and "to improve [their] own practice." The latter is a form of applying research in practice and is widely identified as a goal of practitioner research by teachers (Ermeling, 2010) and by doctoral students who plan to become teacher educators (Jacobs et al., 2015). Gaining knowledge about research is not explicitly mentioned by the participants as a purpose.

An interesting difference emerged in the perceptions of Australian and Dutch educators regarding the purposes of pre-service teacher research. The former group mostly emphasized the need to "develop a professional learning strategy," while the latter indicated the need for "innovation of education," though one teacher educator also acknowledged that such innovation remained a vision, or "our dream". Penuel et al., (2017) make a distinction among different uses of research such as "conceptual" and "instrumental". In this light, the Australian teacher educators seem to perceive pre-service teacher research more in an instrumental way, while the Dutch teacher educators report a more conceptual use. Innovation of education is also cited as a key goal of teacher research by international researchers (e.g., Cochran-Smith & Lytle, 2009; Elliott, 2004; Kemmis, 2009), and recent studies in the Netherlands report a positive connection between practice-based research and school development (Schenke, 2015). Some participating Dutch teacher educators work with academic professional development schools, which are supported by the government. In these schools, university teacher educators, teachers, and pre-service teachers collaborate to conduct practitioner research projects. The aim of these projects is to improve educational practice by sharing results and creating a research culture in the schools (Schenke & Heemskerk, 2016). Within these projects though, the purpose for the

participating pre-service teachers is not to become innovators or researchers but rather to use the research project as a learning strategy, in the context of becoming a teacher (cf. Cochran-Smith et al., 2009).

The perceived learning outcomes identified by pre-service teachers in both countries are in line with the perceived purposes of research as we described earlier. The most important outcomes they mentioned included various characteristics of an inquiry habit of mind (Van der Rijst, 2009), that is, to be open-minded and critical, wanting to share, trying to improve and innovate, and how to be a reflective teacher. Pre-service teachers reported that they are able to apply and conduct research after finishing their pre-service teacher research projects, have gained more knowledge about research (i.e., a broad understanding of a body of knowledge about education and research, and theoretical concepts), and are able to connect this research knowledge with practice. This outcome was also reported by the teacher educators in both countries. Interestingly though, across the multiple institutes, the participating pre-service teachers did not expect to conduct research in their future teaching jobs.

This study reveals similarities in the perceived value of pre-service teacher research among educators and pre-service teachers in four teacher education institutes across Australia and the Netherlands. All participants stated a belief that performing research is important, or even very important, in the process of becoming a teacher, even though one-third of the pre-service teachers indicated that they did not enjoy the research, and some cited negative feelings, such as frustration and stress. These feelings might have influenced their learning processes as well, congruent with findings in research about inquiry-based learning (Kuhn, Black, Keselman, & Kaplan, 2000). If pre-service teachers lack the necessary research skills, conducting a research project could be counterproductive, leading to frustration and a sense that educational practice is too hard or not worth trying to understand. But if pre-service teachers overcome these frustrations and are able to learn these skills, they "come to understand that they are able to acquire knowledge they desire, in virtually any content domain, in ways that they can initiate, manage, and execute on their own, and that such knowledge is empowering" (Kuhn et al., 2000, p. 497). This outcome corresponds with "wanting to achieve" as one of the characteristics of an inquiry habit of mind (Van der Rijst, 2009).

Although in the questionnaires, the pre-service teachers were generally positive about the effects of conducting pre-service teacher research on their future jobs and indicated that they would prefer to work in school contexts where other colleagues share an inquiry habit of mind, in the focus groups, they admitted that they did not

want to continue conducting formal research, similar to the results of a study by Griffioen (2018). This outcome might relate to the compulsory requirements for pre-service teachers to prove their research competency—for example, having to write a literature review, a proposal, and a report, which are time consuming and demanding (Maaranen, 2009; Reis-Jorge, 2007)—or to the lack of a research-oriented culture or knowledge at most schools (Gitlin, Barlow, Burbank, & Kauchak, 1999; Yuan & Burns, 2017).

This study also distinguishes two main categories of the perceived value of pre-service teacher research. The first, and most obvious, is that it is a professional development tool (BERA-RSA, 2014; Sachs, 2016). In this study, pre-service teachers and teacher educators confirmed that conducting practitioner research contributes to the development of reflective practice at the individual level, as well as more generally to the improvement of the teaching profession. This finding aligns with research by Dunn et al. (2008) and Reis-Jorge (2005) about perceptions of research from bachelor students. In this study, pre-service teachers in both countries indicated that they learned to think critically and to link theory and practice by conducting practitioner research. The second category of perceived value emerging from this study refers to empowerment. None of the pre-service teachers used the term empowerment itself, but they explained that by conducting research, they gained a sense of being able to make their own choices about various issues in their practice, use theory to support these choices, and share new insights with colleagues. This is in line with research of Penuel et al. (2017) about school leaders. Pre-service teachers have the perception that they have learned to use research in an instrumental way, which they do not expect to continue in their teaching profession, yet they do see the value of the conceptual use of research: "to expand their conceptions of problems and to persuade others of particular points of view" (Penuel et al., 2017, p.14).

The teacher educators in both countries stated that pre-service teacher research provides a means for pre-service teachers to develop skills to think and act critically and independently and to communicate their thoughts and findings. As a result of this communication about education, pre-service teachers can feel more connected to their colleagues on a professional level, even as early as during their research project. Pre-service teachers also identified that choosing their own topic for their research project is important, because it gives them an opportunity to focus on their own interests and who they wish be as a teacher and researcher. In this sense, pre-service teacher research shapes pre-service teacher identity, and it seems that identity shapes research.

6.1 Limitations

Because of the small sample size in this mixed methods study, external validity is low, and therefore generalisations should be made with caution (Kirk & Miller, 1986). Only four institutes of teacher education (two Australian and two Dutch) participated. This sample is not meant to be representative of teacher education institutes in these countries, let alone teacher education institutes, teacher educators, or pre-service teachers in general. Although all of the participants in this study were involved in the type of programme in which it was feasible to conduct a research project, this may be difficult in some other types of teacher education programmes, in which academic training is not included. We addressed internal validity concerns through triangulation, such that we used questionnaires and focus groups with people from various contexts and with different perspectives, all focused on the same research questions.

Regarding the teacher educators, all of those involved in supervising pre-service teacher research in the participating institutes were invited and agreed to participate in the study. However, while all pre-service teachers were invited, not all chose to participate, so these participants may represent a biased sample; they might have been more positive or more negative about pre-service teacher research than average. In any case, all participants seemed to feel free to speak openly and truthfully; some of the pre-service teachers indicated that they did not like the pre-service teacher research, and all admitted that they were not looking for a job that required both teaching and conducting research.

Another possible limitation is the language used in the focus groups, especially for defining an inquiry habit of mind. In the participating Dutch institutes, an inquiry habit of mind is described in the learning outcomes of the programme, and pre-service teachers are familiar with this terminology. Although the Australian pre-service teachers had never used this term before, they spontaneously mentioned various characteristics of the inquiry habit of mind (Van der Rijst, 2009) in the focus groups and seemed to understand its meaning after the explanation in the introduction of the focus group.

6.2 Implications and further research

In contrast with previous research (e.g., Joram, 2007; Maaranen, 2009; Puustinen et al., 2018), all educators and pre-service teachers in our study perceived pre-service teacher research as very important. Attitudes toward research expressed in the focus groups also were mostly positive, though some pre-service teachers expressed frustration.

Pre-service teachers mentioned that they thought it was valuable to choose their own topics and connect the research project to their practice (Maaranen, 2009). These findings identify an inquiry habit of mind as the most important purpose and learning outcome. Explicit attention to the inquiry habit of mind in teacher education might stimulate this stance of pre-service teachers in their future profession.

Because the pre-service teachers indicated in the focus groups that they did not to expect to continue conducting research in their future job, continued research should seek deeper insights into their reasons. Follow-up studies with cohorts of pre-service teachers from the institutes could investigate when, how, and if they conduct research, as well as whether their views about research change as they enter the workplace or take over supervision of student teachers themselves. To build a research-oriented culture and to stimulate an inquiry stance among teachers, collaboration between teachers, pre-service teachers and teacher educators/researchers in schools might play an important role. Conducting practitioner research together, could be an appropriate form of lifelong learning and innovation of educational practice (e.g., Schenke & Heemskerk, 2016; Uiterwijk-Luijk, Krüger, Zijlstra & Volman, 2017). This also could stimulate the effective utilisation of academic knowledge and the professional development of in-service teachers (Van Schaik, Volman, Admiraal & Schenke, 2018). Future research into the impact of such activities on the inquiry habit of mind of teachers will be important to be able to prepare students, pre-service teachers and teachers for a changing world.

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

CHAPTER 5

The relationship among the quality of inquiry, the quality of teaching, and perceptions toward pre-service teacher inquiry

The previous chapters showed perceptions toward pre-service teacher research of students and teacher educators, which gave insight in the perceived purpose and value, and ways of inquiry education in the curriculum of primary teacher education. The central question of this thesis is about the added value of pre-service teacher inquiry; What is the contribution of this component to the quality of newly-qualified teachers? Chapter 5 sheds light on the relationship among the quality of pre-service teacher inquiry projects, the quality of their teaching and the perceptions toward pre-service teacher inquiry.

This chapter is based on: Van Katwijk, L., Jansen, E., & Van Veen, K. (submitted). *Pre-service teacher research; a way to future proof teachers!? The relationship among the quality of inquiry, the quality of teaching, and perceptions toward pre-service teacher inquiry.* Manuscript submitted for publication.

Abstract

In the Netherlands, pre-service teacher research takes place in the form of inquiry and has been a compulsory component of primary teacher education since a decade. The assumption is that this form of research education can help 'future-proof' teachers. This study examines the relationships among the quality of inquiry, the quality of teaching and pre-service teachers' perception of this pre-service teacher inquiry. Scores for assessments of graduating pre-service teachers (N=650) and a survey (n=236) were used as measurements. The findings indicate positive perceptions of pre-service teacher inquiry and a positive correlation between the quality of inquiry and quality of teaching. Using these data, the study identifies four profiles of pre-service teachers, differentiated by their perceived learning outcomes.

1 Introduction

In recent decades, attention to various forms of pre-service teacher research in teacher education has grown internationally. The assumption is that knowing about research and conducting research by oneself strengthens the quality of teaching. Using practitioner inquiry as a professional learning strategy can help pre-service teachers, teachers and teacher educators become more aware of setting and achieving goals and substantiate their efforts by relying on scientific knowledge produced by others (Darling-Hammond, 2017; Livingston & Flores, 2017; Menter, Peters & Cowie, 2017). However, research shows that many pre-service teachers have a negative attitude toward conducting research (e.g., Joram, 2007; Ponte, Beijaard & Ax, 2004; Puustinen, Säntti, Koski, & Tammi, 2018; Ulvik, 2014) and offer several reasons for their negative attitudes: (1) pre-service teachers would rather spend time practising teaching than conducting research; (2) pre-service teacher research demands too much cognitively and therefore causes stress; and (3) it is a compulsory exercise that involves assessment. Moreover, Grossman's (2005) review study referring mainly to studies situated in the United States revealed 15 years ago that little empirical evidence suggests that doing research, as is taught in teacher education, leads to more effective (prospective) teachers.

More recently, studies about pre-service teacher research in various countries (e.g., Finland, Norway, Sweden, Romania, Portugal, the United Kingdom, the United States) have shown value in pre-service teacher research (e.g., Aspfors & Eklund, 2017; Cochran-Smith, Barnatt, Friedman & Pine,. 2009; Flores, 2018; Gray, 2013; Ion & Iucu, 2016; Råde, 2019; Ulvik, Riese & Roness, 2017). However, these studies focus on master's degree programmes; less is known about pre-service teacher research or inquiry in bachelor programmes (cf. Baan, Gaikhorst, van't Noordende & Volman, 2019; Munthe & Rogne, 2015). Furthermore, most studies use self-reported data from questionnaires and interviews, and empirical studies about pre-service teacher or inquiry contribution to the teaching practice remain scarce.

The present study focuses on Dutch teacher education for primary schools, for which pre-service teacher research, in the form of inquiry, became compulsory ten years ago. Previous research shows that teacher education can encourage the development of research skills among pre-service teachers, as well as influence their perceptions and attitudes toward teacher research (e.g., Aspfors & Eklund, 2017; Maaranen, 2009; Munthe & Rogne, 2015; Van der Linden et al.,2012; Van Katwijk, Berry, Jansen, & Van Veen, 2019a). However, as mentioned previously, few studies explore the relationship

of this pre-service teacher research with the quality of teaching practice. Therefore, the aim of this study is to shed light on the perceived and actual value of pre-service teacher inquiry for becoming a primary school teacher by exploring the relationships among perceptions, teaching quality and quality of pre-service teacher inquiry.

2 Theoretical framework

The purpose of pre-service teacher research and inquiry

Pre-service teacher research in Dutch primary teacher education can be viewed as a form of practitioner inquiry. Extant studies of practitioner research and inquiry and its purpose tend to assume that the continually changing society requires professional teachers who are lifelong learners, who can pose and address emerging challenges and problems that do not have existing answers (Cochran-Smith et al., 2009; Munthe & Rogne, 2015). Ideally, these professional teachers are engaged in practitioner research or inquiry; they know how to integrate and link different kinds of knowledge to the complex problems of schools and classrooms. Practitioner research (or practitioner inquiry) "refers to a variety of educational research modes …, including action research, teacher research, narrative inquiry, … and the use of teaching as a context for research" (Cochran-Smith et al., 2009, p.18). It is a form of professional development aimed at understanding and improving practices within the teacher's local context from an insider perspective (Borko, Liston, & Whitcomb, 2007; Cochran-Smith et al., 2009). Practitioner research offers a range of potential outcomes, such as improving teaching practice (e.g., Ermeling, 2010; Pareja Roblin, Ormel, McKenny, Voogt, & Pieters, 2014), increasing teachers' knowledge and understanding of students (e.g., Butler &Schnellert, 2012; Elm & Nordqvist, 2019; Jacobs, Yendol-Hoppey, & Dana, 2015), and fostering teacher empowerment and transformation (e.g., Dana & Yendol-Hoppey, 2019; Esposito & Smith, 2006). Learning how to conduct practitioner research or inquiry in teacher education can lead to an increased critical, reflective and innovative attitude and a better understanding of scholastic culture; it can also prompt participation in professional learning communities (Cochran-Smith & Lytle, 2009; Dobber, Akkerman, Verloop, & Vermunt, 2012).

In addition to developing pre-service teachers' research skills, teacher educators can directly influence perceptions of and attitudes toward practitioner research and inquiry (e.g., Aspfors & Eklund, 2017; Baan, Gaikhorst, & Volman, 2019; Maaranen & Krokfors, 2008; Munthe & Rogne, 2015; Van der Linden, Bakx, Ros, Bijaard, & Van den

Bergh, 2015). The main aim of teacher education is to educate future-proof teachers with an inquiry stance (Cochran-Smith & Lytle, 2009; Dana & Yendol-Hoppey, 2019), who can work in inquiry-based contexts and use literature or conduct practitioner research to reflect on their own practices or those of their school organisation (Baan et al., 2019a). Inquiry-based working teachers show an inquiry habit of mind and contribute to a culture of inquiry at the school and classroom levels (Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2019b). Characteristics of this inquiry habit of mind include being critical, curious and willing to share, as well as wanting to achieve deep understanding and improve one's own practice (Earl & Katz, 2006; Van der Rijst, 2009; Van Katwijk et al., 2019a).

Although most teacher educators endorse the value of pre-service teacher research, a considerable number of pre-service teachers seem sceptical of its relevance for, and direct use in, the teaching profession (Puustinen et al., 2018; Reis-Jorge, 2007; Ulvik 2014; Van Katwijk et al., 2019a). The intention to conduct practitioner research or inquiry in a future job is related to perceptions and attitudes toward it (Van der Linden et al., 2015; Vrijnsen-de Corte, Den Brok, Kamp, & Bergen, 2013). Van der Linden et al. (2015) state that beliefs about research are equivalent to perceptions of its value, which are more influential than knowledge and therefore strong predictors of future behaviour.

Perceived and actual learning outcomes

Although extant studies do not frequently mention the learning outcomes of pre-service teacher research explicitly, four general findings emerge, mostly based on self-reports. First, most authors consider professional and personal development in general a learning outcome (e.g., Aspfors & Eklund, 2017; Ion & Iucu, 2016; Niemi & Nevgi, 2014; Råde, 2014). Taylor (2017) explicitly mentions the development of a teacher researcher identity, when the teacher educator uses narrative, pedagogical stories and take the role of teacher researcher. Others mention the development of an inquiry stance, including critical reflection, curiosity and wanting to share findings (e.g., Cochran-Smith et al., 2009; Råde, 2014; Uiterwijk-Luijk et al., 2019b; Ulvik, Ries and Roness 2017; Van Katwijk et al., 2019a). Second, studies often refer to knowledge about research and professional knowledge on various educational topics (e.g., Gray, 2013; Kowalczuk-Walędziak, Lopes, Underwood, Daniela, & Clipa, 2019; Munthe & Rogne, 2015; Van Katwijk et al., 2019a). Third, studies commonly consider the development of research skills, such as academic writing, beneficial (e.g., Aspfors & Eklund 2017; Baan et al., 2019b; Maaranen, 2009). Fourth, Baan et al.

(2019a) and Kowalczuk-Walędziak et al. (2019) also mention the application or use of research to improve practice, a concept closely related to the development of teaching competences such as improved support for student learning and introductions of innovative teaching strategies (e.g., Ion & Iucu, 2016; Niemi & Nevgi, 2014; Råde, 2014; Taylor, 2017).

However, Kowalczuk-Walędziak et al. (2019) and Volk (2010) find little evidence that practicing teachers use learned research skills and knowledge after completing their teacher education. In summary, though teacher educators endorse a considerable number of highly ambitious purposes for pre-service teacher research and inquiry, pre-service teachers' perceptions and actual learning outcomes regarding the quality of teaching are unclear.

Teaching quality of pre-service teachers

The quality of teaching is assumed to be a core tenet in teacher education programmes; pre-service teacher research also has come to represent a substantial part of those programmes. However, the exact relationship between these two learning outcomes is complicated, and empirical data on the relationship are lacking. Teacher quality and teaching quality are closely related; teaching quality is the most important indicator of teacher quality (e.g., Darling-Hammond, 2017). A highly qualified teacher can manage groups of pupils and knows what and how to teach—all observable indicators of teaching quality. However, highly qualified teachers also know about learning and make decisions informed not only by their own classroom and school evidence but also by theory and research (Cochran-Smith et al., 2009). Similarly, in the framework for effective teaching, Stronge (2018) emphasizes six behaviours of effective teachers from the perspective of twenty-first-century teaching: professional knowledge, skills for instructional planning (including classroom management), skills for instructional delivery (including cognitive activation, differentiation and learning strategies), assessment for learning, creation of an adequate learning environment and professionalism. These behaviours are driven by key characteristics reflecting the teacher's dispositions, goals and beliefs, which directly affect teaching effectiveness.

Research questions

Against this background, the current study aims to shed light on the perceived and actual value of pre-service teacher inquiry for becoming a teacher by exploring the relationships among perceptions, teaching quality and pre-service teacher inquiry. Because the general idea is that pre-service students are more enthusiastic about

teaching than about research and inquiry, we aim to examine student profiles defined by teaching quality and inquiry quality. The associated research questions we investigate are as follows:

1. What are pre-service teachers' perceptions of the value of pre-service teacher inquiry?

2. What is the most important learning outcome of pre-service teacher inquiry, according to pre-service teachers?

3. a. How does the quality of capstone inquiry projects relate to the quality of teaching exhibited by pre-service teachers?
   b. Which pre-service teacher profiles emerge, reflecting the correlation of inquiry quality and teaching quality?

4. How do these groups differ in their perceptions of pre-service teacher inquiry?

Context

The context of this study is initial teacher education for primary schools, a bachelor's degree programme at a university of applied sciences in the Netherlands. The research component in the programme was introduced ten years ago. During the four years of teacher education (240 European credits [ECs]), pre-service teachers spend 70 ECs in practice and 30 ECs on pre-service teacher research–related learning activities. In their final year, the pre-service teachers teach their own group three days a week for 20 weeks. In this period, they also collect data for their pre-service teacher inquiry project, which covers 15 ECs. Pre-service teachers' practical work is assessed by the supervising teacher and one teacher educator.

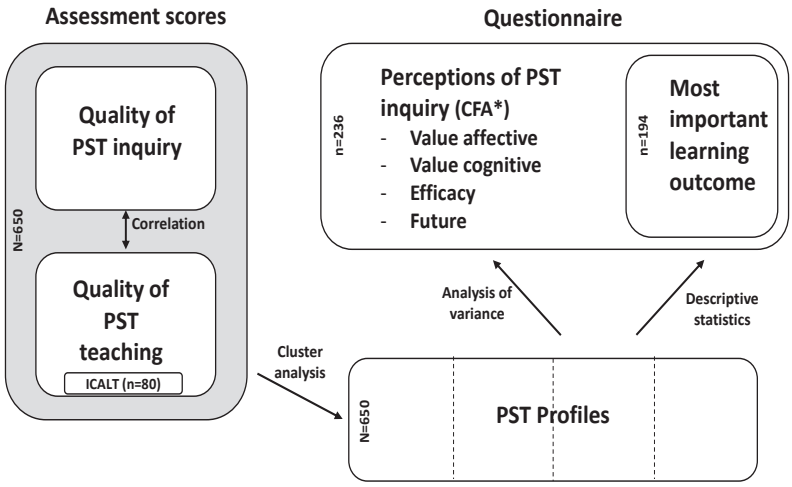
The purpose of pre-service teacher inquiry in the Netherlands is to develop five connected competences: (1) research knowledge, (2) knowledge about research in the domain, (3) research skills, (4) application of findings of previous research in practice and (5) an inquiry habit of mind (Van Katwijk, Jansen, & Van Veen, 2019b). Pre-service teacher inquiry is taught in a teaching-learning trajectory over four years, in which all research activities are closely related to practice. In the third year, pre-service teachers individually conduct a limited literature review and an inquiry project in a team, commissioned by a primary school and supervised by a teacher educator. Pre-service teachers can choose their own topic for the final individual inquiry project, which

is typically in the form of design research or action research. This inquiry project is assessed by two teacher educators using scoring rubrics about all components of practitioner research, such as use of literature, content of the chosen topic, form and the quality of reflection on the process.

3 Methods

Study design

We used a multi-methods approach with a questionnaire and a database of assessment scores. Our analysis strategy consisted of confirmatory factor analyses on Likert-scale questions, which led to four scales measuring pre-service teachers' attitudes to and perceptions of student research (RQ 1); a qualitative analysis of an open question about the most important learning outcome (RQ 2); calculating the correlation between the quality of pre-service teacher inquiry and the quality of pre-service teacher's teaching, both based on assessment scores (RQ 3a); a cluster analysis to identify pre-service teacher profiles (RQ 3b) and, finally, descriptive statistics and an analysis of variance on the profiles and the perceptions of pre-service teacher inquiry (RQ 4) (see Figure 5.1).



*CFA= confirmatory factor analysis

Figure 5.1 Design of the multi-methods approach with analysis strategy

Participants

We used the assessment scores of 650 pre-service primary education teachers, collected during the period 2014–2018. All participants had just graduated from a university of applied sciences in the Netherlands. In total 236 pre-service teachers (15% male, mean age = 23.0 years) completed the questionnaire, titled 'Perceptions of pre-service teacher research', for a response rate of 36%, distributed evenly over the four cohorts. As part of this survey, 194 pre-service teachers (80% of respondents) formulated their own most important learning outcomes of pre-service teacher inquiry in an open question.

Instruments and variables

Questionnaire

The questionnaire was based on two previous instruments about perceptions of pre-service teacher research: Van der Linden et al.'s (2012, 2015) questionnaire and the more general Research Acceptance in Vocational Education Questionnaire (Griffioen, 2018). These instruments have four underlying dimensions, or scales, to measure students' attitudes, perceptions and self-efficacy.

(1) *Value–affective attitude*. All items in this scale involve emotions (e.g., 'I find undertaking inquiry to be dull' [reverse scored]).

(2) *Value–cognitive attitude.* This scale indicates if and how the pre-service teachers perceive the importance of pre-service teacher inquiry (e.g., 'I think conducting research is a good way for me to improve my pedagogical skills'). We added some items about the perceived difficulty of conducting pre-service teacher inquiry.

(3) *Self-efficacy* toward pre-service teacher inquiry. This scale identifies the degree to which students believe they have learned to undertake pre-service teacher inquiry (e.g., 'I have learnt enough to independently conduct practitioner research or inquiry in practice').

(4) Behaviour in the *future*. The scale items pertain to intentions and expectations to conduct practitioner research or inquiry in a future teaching profession (e.g., 'I'll conduct practitioner research in my future job as a teacher to improve my professional teaching practice'). The final questionnaire consisted of 23 Likert-type questions. We measured all items with six-point Likert scales (1 = 'totally disagree' to 6 = 'totally agree'), deliberately eliminating a neutral option. We reverse-scored four negatively formulated items in the analysis (e.g., 'I **don't** think I'll conduct research to resolve a problem in future').

We added open questions, connected to the questions about self-efficacy: 'What have you learnt about pre-service teacher inquiry in the teacher education programme?... The most important learning outcome for me with respect to undertaking practitioner inquiry was...'.

To confirm the suitability of the four scales of perceptions about pre-service teacher inquiry, we performed a confirmatory factor analysis (IBM Amos, version 25). For model fit, we used chi-square fit statistics along with their associated robust comparative fit index (CFI; should be between .90 and .95 for model fit), PClose (for model fit: >.005), standardised root mean square residual (SRMR; close to zero for model fit) and root mean square error of approximation (RMSEA; ideally <.05, but <.08 is acceptable). Because of the sample size, we used the normed chi-square (CMIN/DF), which indicates model fit if it is below 3.0 (Brown, 2006).

The initial model did not result in acceptable model fit (normed χ^2 = 2.36; CFI = .89; PClose = .006 and RMSEA = .08). We evaluated the items in the model on factor loading (which should be >.40) and content and inspected modification indices to estimate which modifications we could make to improve model fit. We ultimately removed seven added items that were not used in the original questionnaires and diverged from the constitutive scales (e.g., 'I think undertaking inquiry is easy'). We also correlated two errors ('I think pre-service teacher inquiry is nice' and '... is motivating'). The fit of the adjusted model was acceptable: CMIN/DF = 2.01; CFI = .95; PClose = .02; SRMR = .055 and RMSEA = .07. The Cronbach's alpha of the four scales indicated good internal consistency (Table 5.1).

Teaching quality

To determine the quality of the pre-service teacher inquiry and teaching quality, we took the assessment scores on the final internship of all just-graduated pre-service primary school teachers (N = 650). We measured teaching—or teacher—quality in the final internship with scores on assessments of seven teacher competences: (1) pedagogical competence (safe and stimulating learning environment), (2) interpersonal competence (communication and relation with learners), (3) pedagogical content knowledge competence (teaching skills), (4) organizational competence (leadership and classroom management), (5) competence to collaborate with colleagues, (6) competence to collaborate with external parties such as parents and (7) competence in own professional development. In the Netherlands, the grading runs from 1 (lowest score) to 10 (highest score), with 5.5 for constituting a passing assessment score. In this study, only successfully graduated pre-service teachers participated, so the scores we used are all between 5.5 and 10.

Supervisors' ratings of teaching are prone to be inaccurate and unreliable (Praetorius, Pauli, Reusser, Rakoczy, & Klieme, 2014). Because these pre-service teachers were assessed by supervising teachers of the school, who were not specifically trained to assess teaching quality, a bias caused by confounding factors (e.g., halo effects) could easily occur (Creemers, Kyriakides & Antoniou, 2012). For example, the relationship (good or bad) between the supervising teacher and the pre-service teacher could have influenced the assessment score. To avoid this bias and increase reliability, we measured the teaching quality of 80 pre-service teachers in the final internship with the validated International Comparative Analysis of Learning and Teaching (ICALT) instrument (Van der Lans, Van de Grift & Van Veen, 2018). The correlation between the ICALT scores and the assessment scores for the final internship was significant ($r = .334$, $p = .003$; two-tailed; see Van Katwijk & Van der Lans, 2016). We deemed this as a fair indication for the use of the assessment scores as measures of teaching quality for the complete sample of 650 students.

Quality of pre-service teacher inquiry

We measured the quality of pre-service teacher inquiry by the scores (between 5.5 and 10, as noted previously) on the pre-service teacher inquiry project, assessed by an inquiry report (N = 650). The assessment consists of three main aspects: (1) content (weight 60%), including problem analysis, theoretical framework, research question, research design, results, conclusions and discussion; (2) form (weight 20%), including structure, language, academic writing, use of correct APA style and layout; and (3) process (weight 20%), including description of the inquiry process, participation in inquiry team and reflection on professional development.

Data analysis

For the first research question, we used descriptive statistics, using SPSS 25 to determine the mean scores and standard deviations on the four scales of the questionnaire. Two researchers independently analysed the open-end question about the perceived most important learning outcome inductively. We compared the categories that emerged, discussed the few differences and came to consensus by applying previous research findings (Van Katwijk et al., 2019b). In 18 of the 194 cases, the pre-service teachers had mentioned two 'most important learning outcomes' instead of one. We decided to split those cases and use both expressions as most important learning outcomes. An independent third researcher analysed the answers once more, deductively with the determined categories. The interrater agreement was high, over 95% (Miles, Huberman & Saldana, 2014).

We were able to link the data from the questionnaires to the scores of both the assessment of pre-service teacher practice and the pre-service teacher inquiry project. We calculated the Pearson's correlation between the scores of assessments of pre-service teachers' practice and the scores of assessments of pre-service teachers' inquiry. The correlation is significant when $p < .001$ and the 95% bias corrected accelerated (BCa) confidence interval (CI) does not include 0 (Field, 2018). To identify different profiles, using scores of pre-service teacher inquiry and scores of pre-service teacher practice, we conducted a two-step cluster analysis in SPSS, using the data of all pre-service teachers (N = 650). The statistical cluster quality is good when the ratio of sizes, largest cluster to smallest cluster, is below 2 (Anderberg, 2014). Because the indicator variables had different ranges, we standardised the scores.

After assigning the pre-service teachers to a cluster, we conducted an analysis of variance (ANOVA) with post hoc comparisons (Bonferroni) to investigate differences between the profiles on their perceptions of pre-service inquiry and the perceived most important learning outcome. We analysed all data anonymously.

4 Results

Perceptions regarding pre-service teacher inquiry

We measured student teachers' perceptions of pre-service teacher inquiry with four scales (Table 5.1). We determined two scales that were linked to the perception of the *value* of pre-service teacher inquiry: the *cognitive attitude* (mean score: 4.5) and *the affective attitude* (mean score: 4.6). Both offer indications that students believe that pre-service teacher inquiry is valuable.

Table 5.1. Descriptive statistics of the four scales in the perception of pre-service teacher inquiry questionnaire (N = 236)

Scales (# items)	Cronbach's Alpha	M	SD
Scale Value affective (6)	.88	4.5	.76
Scale Value cognitive (4)	.83	4.6	.85
Scale Self-efficacy (3)	.79	5.0	.70
Scale Future (4)	.85	4.0	.98

Note: Results are based on items with six-point Likert scales (1 = 'I fully disagree',..., 6 = 'I fully agree').

The scale *Self-efficacy* indicates that pre-service teachers believe themselves able to conduct practitioner inquiry after finishing teacher education. The mean of the *Future*

behaviour scale is relatively low (M = 4.0), compared with the scales *Value* and *Self-efficacy*, but still above the scale mean. We observed no significant differences in perceptions of pre-service teachers across the cohorts, by age or by gender.

Most Important Learning Outcomes of Pre-Service Teacher Inquiry

As mentioned previously, 194 pre-service teachers (80% of the respondents) formulated their own most important learning outcome, which we subdivide into seven categories (see Table 5.2 for examples):

(1) To conduct research (undertake inquiry): pre-service teachers mentioned conducting research in general or focused on research aspects such as the research cycle.
(2) To write academically: pre-service teachers mentioned that academic writing is difficult, something they have not encountered before.
(3) To use literature: pre-service teachers noted that inquiry involved using literature in new way, not just for passing an exam.
(4) Knowledge about the subject: pre-service teachers experienced becoming a specialist in a certain topic.
(5) An inquiry habit of mind: pre-service teachers mentioned several characteristics of an inquiry habit of mind (e.g., to be critical, to want to achieve), as well as an inquiry habit of mind itself.
(6) To link research and practice: pre-service teachers indicated that they experienced how to use research for improving practice.
(7) Miscellaneous: learning outcomes mentioned just once or twice (e.g., to be able to undertake inquiry independently and not in a group).

Most responses indicated 'to conduct research/inquiry' as most important learning outcome. Although 'to write academically' and 'to use literature' also fit into the category 'to conduct research/inquiry', we decided to make separate categories for them because they were mentioned explicitly by more than 10 students. Over 40 pre-service teachers mentioned 'knowledge about the subject' or 'to apply research in practice'. Thirty-four pre-service teachers responded with 'an inquiry habit of mind' specifically or else mentioned one or more characteristics of an inquiry habit of mind.

Table 5.2 Most important learning outcomes of pre-service teacher inquiry, mentioned by responding students (n = 194; # quotes = 208)

Most important learning outcome	Number of mentions	Examples
1. To conduct research (inquiry)	54	· 'To conduct research; to analyse results' · 'To realise how much information comes from a good problem analysis'
2. Knowledge about the subject	44	· 'I now know how to identify, observe and register gifted toddlers' · 'To know about education in South-Africa'
3. To apply research in practice	41	· 'To combine literature and practice' · 'To find a solution for a practical problem in a structural way and link this to literature'
4. An inquiry habit of mind	34	· 'My inquiry habit of mind! And to look objective to research questions' · 'To look consciously, be critical, look broadening'
5. To write academically	15	· 'Academic writing; for example to paraphrase' · 'Writing: professionally, short, powerful and creatively'
6. To use literature	12	· 'To do a literature review autonomously' · 'To Search and read literature'
7. Miscellaneous	8	· 'The importance of having a good supervisor' · 'Doing it yourself; individually'

Relationship between pre-service teacher inquiry and teaching

To determine whether the quality of pre-service teacher inquiry was related to pre-service teaching quality, we calculated the bivariate correlation between the scores of pre-service teacher inquiry and the final assessment scores of the pre-service teaching practice (N = 650). We found a significant, positive correlation between the scores on pre-service teacher practice and the scores on pre-service teacher inquiry (r = .224, 95% BCa CI [.148, .298], p < .001); pre-service teachers who achieved high scores for their pre-service teacher inquiry achieved significantly higher scores for their teacher practice assessment than students who scored lower on pre-service teacher inquiry. To gain a deeper understanding of this relationship and how various pre-service teachers perceive the value of pre-service teacher inquiry, we identified profiles by conducting a cluster analysis.

The cluster analysis performed on the scores for pre-service teacher practice and inquiry (N = 650), was fairly good; the ratio of sizes, largest cluster to smallest cluster, was 1.66. We determined clusters by face validity and statistical cluster quality, resulting in four profiles (see Figure 5.2):

Profile 1, *Good practitioners* (n = 207; 32%): pre-service teachers who score low on pre-service teacher inquiry (M = 6.3) and high on teaching practice (M = 8.5).

Profile 2, *Average students* (n = 191; 29%): pre-service teachers who score average on both pre-service teacher inquiry (M = 7.2) and teaching practice (M = 7.8).

Profile 3, *High achievers* (n = 127; 20%): pre-service teachers, who have high scores on both pre-service teacher inquiry (M = 7.8) and teaching practice (M = 8.6).

Profile 4, *Low achievers* (n = 125; 19%): pre-service teachers who score below average on both pre-service teacher inquiry (M = 6.2) and teaching practice (M = 6.8).

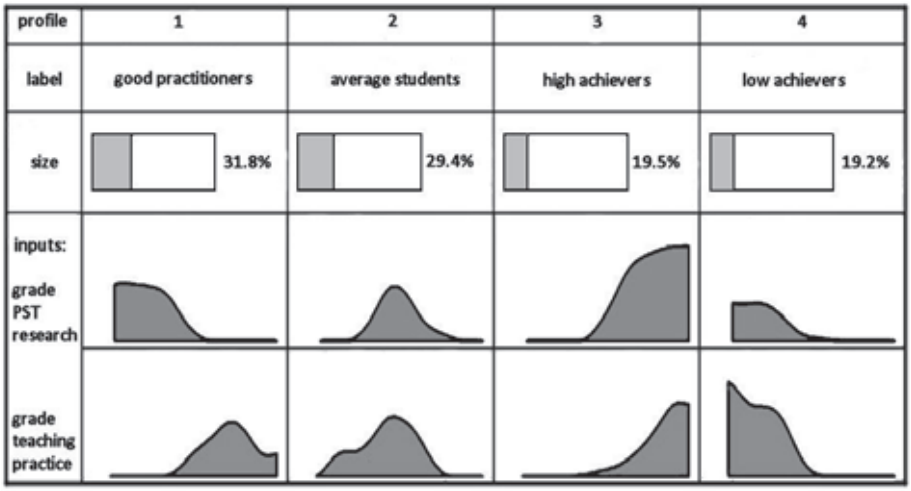
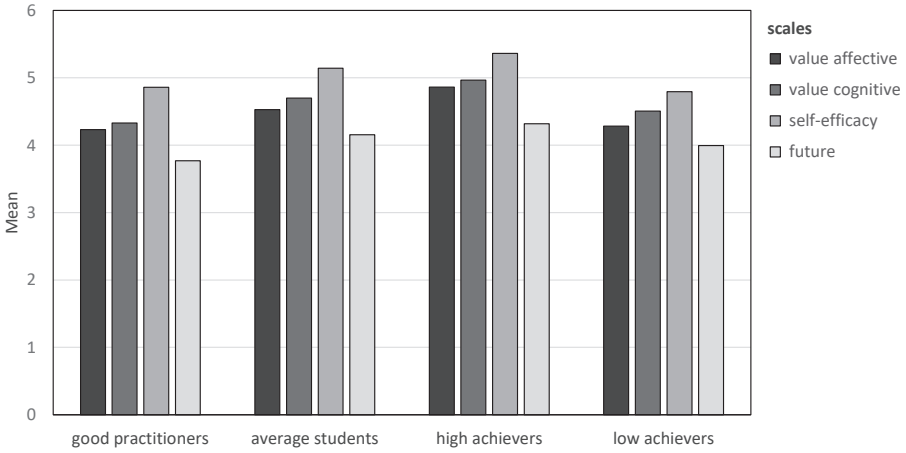


Figure 5.2 Cluster analysis of scores on the pre-service teacher inquiry project and scores on the teaching practice assessment, leading to four profiles (N=650)

Perceptions of pre-service teacher inquiry in the profiles

We analysed whether students in the four profiles differed in attitudes toward pre-service teacher inquiry or their perceptions of the most important learning outcome. The ANOVA showed statistically significant differences between the profiles for all the scales (see Figure 5.3): Value affective $F(3, 227) = 9.73$, $p = .000$, Value cognitive $F(3, 227) = 7.39$, $p = .000$, Self_Efficacy $F(3, 227) = 8.53$, $p = .000$, and Future $F(3, 227) = 4.04$, $p = .008$. The Bonferroni post hoc test showed significant differences on the first three scales between the good practitioners (profile 1) and the high achievers (profile 3), and between the high achievers and the low achievers (profile 4). For the scale Future, we only found significant differences between the good practitioners and the high achievers. Profile 2 (average students) showed no significant differences

with the other profiles. Figure 5.3 shows a bar chart of the mean scores on the scales divided over the four pre-service teacher profiles.

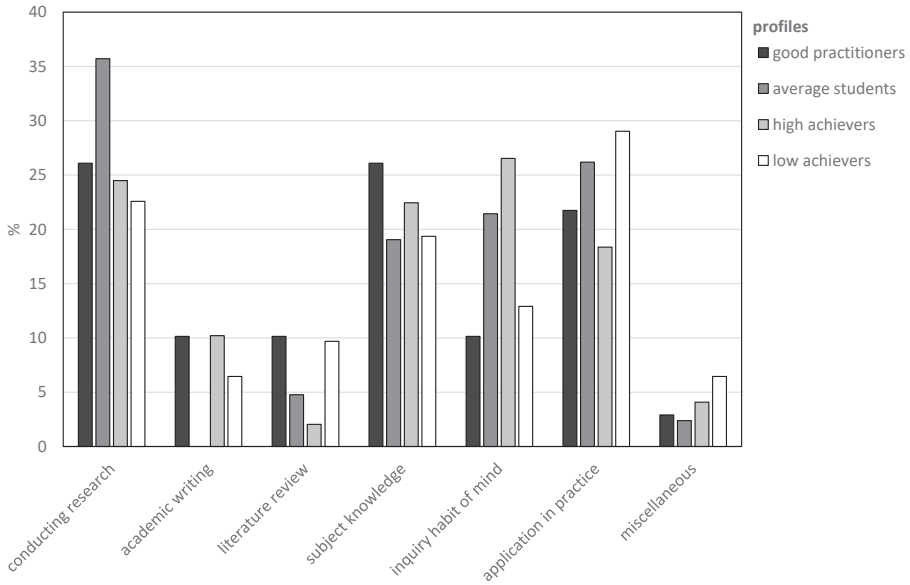


Profile 1: Good practitioners, n = 69; Profile 2: Average students, n = 42; Profile 3: High achievers, n = 49; Profile 4: Low achievers, n = 31

Figure 5.3 Mean scores of the different scales from the questionnaire perceptions of pre-service teacher inquiry, by pre-service teacher profiles

We observed no significant differences across the profiles in gender, age, cohort or previous education. However, the profiles showed different patterns of their perceptions of the most important learning outcomes (Figure 5.4).

The high achievers, pre-service teachers who achieved high scores on their inquiry project as well as on their teaching assessment, indicated development of the inquiry habit of mind as the most important learning outcome. This perceived learning outcome was mentioned less frequently in all other profiles. The average students (profile 2) indicated conducting research/inquiry as the most important learning outcome. The good practitioners (profile 1) also indicated relatively often that conducting research/inquiry was the most important learning outcome, but they indicated increased knowledge of the studied subject just as frequently. The low achievers (profile 4) indicated that they mainly learned to apply research findings in practice. Overall, we found significant and remarkable differences across the four profiles of pre-service teachers.



Profile 1: Good practitioners, n = 69; Profile 2: Average students, n = 42; Profile 3: High achievers, n = 49; Profile 4: Low achievers, n = 31

Figure 5.4 Perceived most important learning outcomes of pre-service teacher inquiry, by four pre-service teacher profiles

5 Conclusion and discussion

The aim of this study was to gain insights into the perceived and actual value of pre-service teacher inquiry for becoming a teacher by exploring the relationship among perceptions, teaching quality and pre-service teacher inquiry. Focusing on the relationship between the quality of the capstone inquiry projects and the quality of teaching of pre-service teachers, we identify four profiles with distinctive perceptions of the most important learning outcomes earned through pre-service teacher inquiry.

The perception of graduating pre-service primary education teachers toward pre-service teacher inquiry is positive, regardless of their assessment scores. First, pre-service teachers indicate a positive cognitive attitude toward inquiry and regard it as important and a good way to become more professional. Second, they express a positive affective attitude and indicate that the pre-service teacher inquiry project was interesting to do. These positive attitudes are important for their continuing professional development as a teacher (e.g., Cochran-Smith et al., 2009; Van der Linden

et al., 2015). Third, they indicate confidence in undertaking practitioner inquiry after finishing their capstone inquiry project. Although this self-efficacy for undertaking inquiry might be influenced by their recent completion of their inquiry project, it still might contribute to their involvement in inquiry-based working in a future job (e.g., Baan et al., 2019a; Uiterwijk-Luijk et al., 2017). These positive perceptions are in line with some previous studies about master's degree programmes (e.g., Aspfors & Eklund 2017; Kowalczuk-Walędziak et al., 2019; Ulvik, Ries & Roness, 2017), though other studies report negative perceptions among pre-service teachers, who stated they did not see the connection with their teaching practice (e.g., Puustinen et al., 2018). The explicit link between theory and practice and the possibility of applying findings from previous research to their own practice seems to contribute positively to pre-service teachers' perceptions.

We find a significant positive correlation between scores on pre-service teacher practice and scores on pre-service teacher inquiry. It is not a very strong relation, and no causality has been proven. To gain deeper insight in this relation and the link to the perceived value of pre-service teacher inquiry, we conducted a cluster analysis to identify pre-service teacher profiles on the basis of the quality of their pre-service inquiry and teaching. The pre-service teachers in the low achievers and good practitioners profiles expressed less positive attitudes toward pre-service teacher inquiry than the high achievers. The differences in perceptions of the most important learning outcomes were remarkable. The high achievers realised that the development of an inquiry habit of mind, characterised by being critical and curious, wanting to share and wanting to achieve, is their most important learning outcome; this perception corresponds to the most important purpose of pre-service teacher inquiry, as described in the teacher education programme (Van Katwijk et al., 2019b). We view this finding as similar to the results obtained with students who wrote stronger papers in Cochran-Smith et al. (2009): When the authors scored inquiry projects, they found that in the stronger papers, the research question was connected to a larger theoretical or conceptual vision about teaching and learning, signalling that the inquiry experience functioned as 'a springboard for further learning about learning' (p.25). The average students and low achievers in our study might not have understood the recursive nature of research, and the assessment part with scoring rubrics might have encouraged a procedural understanding of practitioner research and inquiry (Cochran-Smith et al.,2009). At minimum, the pre-service teachers in all four profiles noticed the value of linking theory and practice.

This study has some limitations. First, all participants were pre-service teachers from one university of applied sciences who followed the same programme. Therefore, generalisations regarding other programmes should be made with caution. Second, all data were from recent graduates; pre-service teachers who did not pass one or both of the assessments on teaching or inquiry might have decided not to complete the study, and their perceptions were not included in this study. Third, some results from the questionnaire highlight the need for further research. For example, the Future scale indicated the expectation of pre-service teachers to conduct practitioner research or inquiry in their future profession, which might not be a reliable measure for their actual future behaviour (Fishbein & Ajzen, 2011). Attitudes can vary with the context in which they are expressed. Therefore, examining the various contexts (e.g., different teacher education programmes, background information about the culture of inquiry at schools, internships where pre-service teachers obtain experience with practitioner research or inquiry) would be worthwhile pursuits for further research.

Previous research has rarely taken the quality of the pre-service teacher inquiry, assessed by teacher educators or researchers, into account; most studies are based on self-reporting methods such as questionnaires and interviews (e.g., Aspfors & Eklund 2017, Kowalczuk-Walędziak et al., 2019; Niemi & Nevgi 2014; Van der Linden et al., 2015). However, a limitation of the present study is that the results are based on single assessment scores of pre-service teaching practice and of the inquiry project. We did not differentiate the quality of various aspects of the assessment of the inquiry project, such as theoretical framework or reflection on professional development teaching assessment; therefore, we cannot indicate which aspects of pre-service teacher inquiry contribute to developing teachers with an inquiry stance. Moreover, longitudinal research into the relation between the quality of pre-service teacher inquiry and ongoing professionalization during the teacher career and improvement of practice would be an interesting next step.

Despite these limitations, our study provides insight into perceptions and actual learning outcomes of pre-service teacher inquiry, which was introduced ten years ago in primary teacher education in the Netherlands. These insights likely are relevant for teacher education programmes with similar settings. Teacher education aims to develop future-proof teachers, such that they are effective in ensuring student achievement and focused on ongoing professional development (Darling-Hammond, 2017). These teachers are able to use and conduct research to evaluate and improve their practice and contribute to a culture of inquiry in their classrooms and school (Baan et al.,2019a; Uiterwijk-Luijk et al., 2019b). The pre-service teachers

in the studied programme believe they have developed their research skills, inquiry habit of mind and research literacy and that they are able to apply previous research in their own practice. Due to pre-service teacher inquiry, they are ready to do inquiry-based work and possess the abilities to adjust and improve their practice to changes in their classrooms and schools.

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

CHAPTER 6

General conclusions and discussion

1 Introduction

Pre-service teacher inquiry is increasingly required in teacher education worldwide, largely because research literacy is assumed to constitute an important foundation for teachers' continuous professional development. In the Netherlands, pre-service teacher inquiry became compulsory in the professional bachelor of primary teacher education about ten years ago, as a result of European agreements in the Bologna Process. However, few empirical studies have explicitly investigated what teacher educators and pre-service teachers perceive as the purpose, value and learning outcomes of such research requirements in teacher education programmes at universities of applied sciences. Furthermore, few studies address the relationship of pre-service teacher inquiry with the quality of pre-service teachers' teaching practice.

The main aim of this thesis is to gain insight into the contribution of pre-service teacher inquiry to self-reported changes in attitude, knowledge/insight, skills and expertise of pre-service teachers, along with improvements in their professional practice. To achieve these underlying goals, we formulated the following research questions:

1. What is the purpose and value of pre-service teacher inquiry in primary teacher education (in intended, implemented and attained curriculum)?

2. How is the development of pre-service teacher inquiry competences implemented in teacher education programmes?

3. What are the most important perceived and actual learning outcomes from pre-service teacher inquiry?

4. What are the relationships among pre-service teacher's perceptions, quality of pre-service teacher inquiry and teaching quality?

These research questions guided us along the various perspectives of the teacher education curriculum. The curriculum model of Van den Akker (2003) formed the framework of analysis (see Figure 1.1, p. 11), which also is reflected in the presentation of the main findings. We conducted a document analysis to explore the descriptions of pre-service teacher research and inquiry in the *ideal* and the *formal* curriculum of primary teacher education (Chapter 2). To analyse the *implemented* curriculum, we used perceptions of teacher educators and pre-service teachers in the Netherlands and

Melbourne, Australia (Chapters 3 and 4). We gained insights into the perceived and actual learning outcomes, as part of the *attained* curriculum, through questionnaires, focus groups and assessment scores regarding teaching quality and quality of the pre-service teacher inquiry (Chapters 3, 4 and 5).

This final chapter begins with an overview of the main findings and conclusions and then turns to a discussion regarding a selection of these findings and an elaboration of the scientific contribution of this thesis. We continue with the most important limitations and recommendations for future research and end with implications for practice.

2 Main findings

Pre-service teacher inquiry in the curriculum of primary teacher education

The goal of the document analysis of Chapter 2 was to gain insight into the described purpose and value of pre-service teacher research and inquiry in the intended curriculum, divided into ideal and formal curricula, of primary teacher education in the Netherlands. Nineteen institutes (>75%) participated by sharing their vision in policy documents about pre-service teacher research and programme descriptions, including teaching activities and assessment rubrics. The findings show that the main purpose and value of pre-service teacher inquiry is to develop an inquiry stance (in Dutch, *onderzoekend vermogen*). Through this analysis, we defined an inquiry stance as 'the ability to conduct practitioner research and to use it to improve one's own professional practice through the integration of research knowledge, research skills, an inquiry habit of mind, and the ability to apply previous findings in practice'. The initial literature review resulted in four pre-service research competences, but the document analysis brought to light six related inquiry competences these institutes required to develop an inquiry stance: (1) *research knowledge* (e.g., methodology); (2) *knowledge about current research* in the discipline; (3) *research skills*, including analysing problems related to practice, undertaking literature reviews, collecting and analysing data and communicating results; (4) *ability to apply findings* from previous research to practice; (5) *an inquiry habit of mind in conducting research* (e.g., being curious about and critical toward previous research) and (6) *an inquiry habit of mind in practice* (e.g., being curious about and alert to pupils' change in behaviour, wanting to share experiences of own educational practice). Although the last competence is mentioned as one of the goals of pre-service teacher research in 70% of the policy documents, it is hardly

described in teaching activities or in the assessments regarding pre-service teacher research. Reasons for this omission may include its intangible nature, which makes it difficult to assess, and that it is implemented and assessed in the practical component at primary schools.

Analyses of the *formal* curriculum show that the implementation of pre-service teacher inquiry, in teaching activities and assessment rubrics, mostly focuses on *research skills*, though the development of *an inquiry stance*, including *an inquiry habit of mind*, is intended. No institute for primary teacher education in the Netherlands intends to educate researchers, but the method of assessment, a research report with a scoring rubric, is not fully aligned with this intention. As a result, pre-service teachers might not associate pre-service teacher inquiry as something that can give them a better understanding of their pupils' learning and improve their teaching in the classroom, but only as a capstone assignment or a separate activity for researchers.

Perceptions of the purpose, value and implementation of pre-service teacher inquiry

To gain insights into the role of pre-service teacher inquiry in the *implemented* and *experienced* curriculum, we investigated perceptions of teacher educators and pre-service students in the Netherlands and Australia (Chapters 3 and 4) using a survey and focus groups. We compared their perceptions about the purpose and value with the intended development of inquiry competences.

The findings show that both pre-service teachers and teacher educators, in the Netherlands as well as in Australia, believe that pre-service teacher research and inquiry leads to better teachers. One of the most important reasons mentioned was the experience that undertaking inquiry empowers pre-service teachers. This empowerment is already apparent during the inquiry project: pre-service teachers specialise in a certain topic and feel the need to share their theoretical and practical findings and to initiate dialogues about education with colleagues. In doing so, they perceive that they are being taken more seriously and treated as a full and professional colleague. After completing the inquiry project, they felt empowered to discuss school policy, using findings of previous research with the aim to improve practice. Pre-service teachers exhibited a positive perception of and attitude toward pre-service teacher inquiry: they believe it is important and interesting and a good way of achieving professionalisation. Most pre-service teachers experienced feelings of frustration during their inquiry project, because for many it was ultimately the most demanding component of teacher education. Nevertheless, all pre-service

teachers noted that they learned how to conduct practitioner inquiry. Teacher educators suggest that the pride, which pre-service teachers express after completing the inquiry project, is partly caused by the difficulties they experienced during the inquiry process. "No friction, no shine!" Despite the positive attitude towards pre-service teacher inquiry, at least one-third of the pre-service teachers do not intend, or expect, to conduct practitioner inquiry in their future jobs as teachers.

Pre-service teachers perceive that the programme focuses on research skills, whereas teacher educators tend to believe it encompasses a broader inquiry habit of mind. Few pre-service teachers in our study were able to identify teaching activities that had stimulated their inquiry habit of mind, though teacher educators mentioned various examples from their own teaching practices. The pre-service teachers indicated some key factors for successful implementation of pre-service teacher inquiry in the programme, such as a clear teaching-learning trajectory and good supervisors. The link to practice and the opportunity to focus on a self-chosen topic during the inquiry project are important motivators.

Perceived and actual learning outcomes of pre-service teacher inquiry

The last study from this thesis (Chapter 5) focuses on the relationship among perceptions, teaching quality and the quality of pre-service teacher inquiry. We used the assessment scores on the final internship and the scores on the inquiry project of 650 pre-service teachers as indicators for the quality of teaching and inquiry. Our finding of a significant positive correlation between scores on pre-service teacher practice and scores on pre-service teacher inquiry prompted us to further explore this relationship. To gain deeper insight into the perceived and actual learning outcomes, the *attained* curriculum, we examined pre-service teacher profiles defined by teaching quality and inquiry quality.

The learning outcomes of pre-service teacher inquiry perceived to be the most important differ for various pre-service teacher profiles (we categorised students in four such profiles): the *high achievers* report characteristics of an *inquiry habit of mind* to be the most important learning outcome, the *good practitioners* mention *knowledge of specific subjects*, the *average students* report *research skills*, and the *low achievers* mention *application of findings in practice*. The high achievers understand the purpose and value of pre-service teacher inquiry that is intended in the curriculum. Students in other profiles show less understanding of the recursive nature of the inquiry process—that teaching is a process driven by questions and continuously responsive to the data of practice.

3 General conclusion

Both pre-service teachers and teacher educators endorse the value of pre-service teacher inquiry; in short, for pre-service teachers the added value of pre-service teacher inquiry is empowerment. For many for the first time in their education to become a teacher, they feel empowered in the sense of becoming more aware, having more understanding and control of their teaching practice and a stronger sense of agency. In general, empowered teachers are curious and critical; they have learned not to follow educational fads, methods or school policy slavishly; know how to use and apply research to own educational settings; and want to share findings from practitioner inquiry that aims to improve practice. Moreover, we found a positive correlation between the quality of inquiry and the quality of teaching, which requires further research into underlying factors and processes. Following the curriculum model of Van den Akker (2013), we note room for improvement: the most important purpose of pre-service teacher inquiry in the intended curriculum, *an inquiry habit of mind*, is only recognised as such by the high achievers. To develop the inquiry stance and produce more inquiry-based working teachers, teacher educators should emphasise the development of an inquiry habit of mind and the alignment between the purpose of pre-service teacher research and teaching activities ~~i~~ncluding assessments ~~i~~n their communications with students.

4 Discussion

For about ten years, pre-service teacher inquiry has been a compulsory component of the curricula of universities of applied sciences in the Netherlands as a result of European agreements. Previously, universities of applied sciences were mainly focused on education, and a research culture was lacking (Geerdink et al., 2015; Griffioen, 2013; Van der Linde et al., 2012). To introduce inquiry in the curricula, the universities of applied sciences copied research teaching activities and forms of assessment from research universities, emphasising the qualification aspect, characterised by assessments of knowledge and skills about conducting research. This approach to pre-service teacher inquiry reached a new height during national accreditation in 2015, which focused on capstone projects. Introducing pre-service inquiry in the teacher education programmes of universities of applied sciences also had downsides, such as a delay in graduation, even for students who showed good teaching skills. Another

problem was that teacher educators had difficulties in supervising pre-service teacher inquiry. During this time, most teacher educators had no experience in conducting or supervising research activities and were recruited because of their teaching qualities (Geerdink et al., 2015). Why pre-service teacher inquiry had become compulsory and if this led to better teachers were not clear.

Pre-service teacher research or inquiry

The distinction between research and inquiry (Reid, 2004), as described in the introduction, was quite relevant for primary teacher education in the professional bachelor's degree programmes. The aim of Dutch primary teacher education programmes is to educate pre-service teachers to become practitioners who use intentional and systematic methods as a learning strategy to inquire into their own practice (Borko et al., 2007; Cochran-Smith et al., 2009). The aim is not to educate them to become researchers. Pre-service teachers should ideally be driven by curiosity and knowledge about an educational problem in a particular context to improve their own educational practice (Jacobs et al., 2015). The use of a variety of quantitative and qualitative research methods and scientific, international literature, as well as a contribution to the knowledge base of educational research, elements of academic research, is not a requirement. Therefore, the professional bachelor's degree programme for primary teacher education should focus on pre-service teacher inquiry, not on research. We insist to use the Dutch term *praktijkonderzoek* as the formal definition for inquiry in documents concerned.

Developing an inquiry stance

As mentioned previously, the aim of pre-service teacher research or inquiry in teacher education is to educate teachers with an inquiry stance (Cochran-Smith & Lytle, 2009) to become curious and critical teachers whose work is inquiry based (Baan, Gaikhorst & Volman, 2018; Toom et al., 2010; Uiterwijk-Luijk et al., 2019). Pre-service teacher inquiry represents a professional learning strategy intended to improve the teaching practice by focusing on student learning and systematic adaptations of teaching to students' needs using scientific knowledge (Dana & Yendol-Hoppey, 2014; Dobber et al., 2012). Introducing the development of *an inquiry stance* in a teacher education programme is much more complicated than teaching and assessing an *inquiry as project*, which treats inquiry as a time-bound activity (Cochran-Smith et al., 2009). By requiring a research report, as capstone, the teacher education programme ensures that pre-service teachers view pre-service teacher inquiry as a project. Therefore,

average pre-service teachers focus on precisely meeting the requirements and rubric of the research project. They are encouraged to gain a procedural understanding of inquiry, rather than making inquiry an integral part of their teaching practice. To develop *an inquiry stance*, inquiry should be genuinely promoted as a disposition, a way of knowing about teaching and learning, that is integrated into all teaching activities and assignments, including the professional experience period, rather than a procedural activity to complete the programme (Cochran-Smith et al., 2009).

Developing inquiry competences in primary teacher education

Although the inquiry competences distinguished herein are intertwined in practice, the distinction among the competences is functional with regard to teaching and learning related to pre-service teacher inquiry and developing an inquiry stance. In Chapter 3 (Figure 3.1, p.37), we adapt Healey and Jenkins's (2009) model with the inquiry competences that emerged in the document analysis, and we describe teaching and learning activities that literature identifies as effective in engaging pre-service teachers in inquiry and developing inquiry competence (e.g., Aspfors & Eklund, 2017; Munthe & Rogne, 2015; Schulz & Mandzuk, 2005; Van der Linde et al., 2015). Teacher educators mentioned examples of their teaching activities, referring to all inquiry competences in all four quadrants of the model. Thus, the *intended* and *implemented* curricula contain elements of the four main types of undergraduate engagement with research and inquiry, which is desirable (Healey & Jenkins, 2009). Pre-service teachers, however, typically do not recognise teaching activities in the *research-tutored quadrant* that have stimulated or developed their *inquiry habit of mind*. They were more likely to mention activities in the *research-based* quadrant (e.g., the capstone inquiry project) but suggested a minor role of teacher educators during these learning activities. Some pre-service teachers mentioned that they experienced a lack of technical and practical training in research methodology (*research-tutored* and *research-oriented* activities). All indicated the importance of good supervisors who have research knowledge and experience and skills to motivate during the capstone project.

To stimulate and develop the inquiry habit of mind, pre-service teachers should practice with argumentation, decision making and justification while problem solving (Toom et al., 2010). Working in pairs, with critical friends, or communities of practice improves critical reflection (Dobber et al., 2012; Van der Linden et al., 2010). The use of Lesson Study in pre-service teacher education might contribute to the development of the inquiry habit of mind as well, because it involves collaborative

inquiry (e.g., Bjuland, & Mosvold, 2015; Leavy & Hourigan, 2016; Næsheim-Bjørkvik, Helgevold & Østrem, 2019). The organisation of formal conferences, in which pre-service teachers present their inquiries to peers, teacher educators, teachers and school board members can stimulate sharing of findings and involve schools in inquiry projects (Schulz & Mandzuk, 2005).

Relationship between quality of pre-service teacher inquiry and teaching

We found a positive relationship between pre-service teacher inquiry and teaching practice (Chapter 5). Given the correlative nature of this part of the study, any causality remains obscure; however, the qualitative focus group data confirm a relation between pre-service teacher inquiry and teacher quality. In addition, we are aware that we used data only from one university of applied sciences. Nevertheless, the perceived learner outcomes, as connected with the pre-service teacher profiles, show that pre-service teacher inquiry attributes improve educational practice. Because of the complex nature of education and the number and variety of factors influencing professional development of pre-service teachers, a specifically designed study is called for to measure the actual impact of pre-service teacher inquiry on teaching practice. A closer assessment of into this relationship could be beneficial for the improvement of teacher education. In our study, we measured the teaching quality and pre-service teacher inquiry quality using single assessment scores. Relationships between specific teaching competences, such as instructional skills, and specific inquiry competences, such as knowledge about research in the domain or inquiry habit of mind in practice, are not studied. Future research into these specific relationships and networks of factors is highly relevant for a careful evaluation and adaptations of teaching activities in the programme. It would provide deeper insights into the development of an inquiry stance. We advocate a proper experimental setup, across multiple institutes for primary teacher education, in which a sub-set of the most relevant factors identified here is controlled for and assessment scores are specific for each aspect of the teaching and inquiry competences.

Intended use of inquiry competences in the future profession

One of the aims of introducing research education in bachelor programmes is that the graduated professional will use the inquiry competences in their future profession (Griffioen, 2018). Although the questionnaires indicated that pre-service teachers were generally positive about the effects of undertaking pre-service teacher inquiry on their future jobs, in the focus groups they admitted that they did not expect to

continue conducting practitioner research. This finding is similar to Griffioen's (2018) study about Dutch students in a professional bachelor's degree programme. Kowalczuk-Walędziak et al. (2019) and Volk (2010) also found little evidence that learned research skills and knowledge were used in the teaching profession after completing teacher education. Using the data of the focus groups with teacher educators and pre-service teachers in the Netherlands and Australia (Chapters 3 and 4), we unravelled three main reasons for this disconnect:

(1) the expectation that newly qualified teachers will focus on teaching—and not on practitioner inquiry—during their induction periods, which is in line with concepts of professional development of early career teachers (e.g., Fuller, 1969; Louws, Van Veen, Meirink & Van Driel, 2017). This focus, however, does not totally contradict an inquiry stance.

(2) the formal way pre-service teacher inquiry is taught and assessed (e.g., having to write a literature review, a proposal and a report), which can be time-consuming and demanding (Kowalczuk-Walędziak et al., 2019; Maaranen, 2009; Reis-Jorge, 2007).

(3) the lack of research culture and knowledge in most primary schools (Gitlin, et al., 1999; Yuan & Burns, 2017). Pre-service teacher respondents in our study indicated that they would prefer to work in school contexts in which other colleagues share an inquiry habit of mind. Van den Bergh, Ros, Vermeulen and Rohaan (2017) show a positive relationship between teachers' inquiry experience during teacher education and the self-assessment of several aspects of their inquiry habit of mind and literature use, which are part of the research culture in primary schools. The growing number of teachers with research or inquiry experience from bachelor's and master's degree programmes might influence this research culture and the teachers' intention to conduct practitioner inquiry in the next decade.

Despite these hurdles to conducting practitioner inquiry in the future profession, newly qualified teachers need not consider them a problem as long as they can use inquiry competences or show an inquiry stance. The research culture in the school will determine the expression and further development of the inquiry stance of newly qualified teachers. Ownership in relation to the teaching approach and the role of the school leader seem to be most important (cf. Baan et al., 2018).

5 Scientific contribution

This dissertation contributes to the existing body of knowledge on pre-service teacher research and inquiry. First, the focus on pre-service teacher inquiry in primary teacher education, that is, a bachelor's degree programme, is unique. Ample research on practitioner research and inquiry in various countries focuses on in-service teachers (e.g., Cochran-Smith & Lytle 2009; Sachs, 2016; So, 2013), teacher educators (e.g., Jacobs et al., 2015; Tack & Vanderlinde, 2014) or pre-service teachers in post-graduate programmes (e.g., Aspfors & Eklund, 2017; Darling-Hammond, 2017; Råde, 2019; Toom et al., 2010). However, few studies focus on teaching pre-service teacher inquiry competences to students in a professional bachelor's degree programme, such as in our context (e.g. Dunn et al., 2008; Munthe & Rogne, 2015). Our findings confirm to a large extant results in post-graduate and in-service contexts.

Second, although practitioner research and inquiry is assumed to constitute an important foundation for teachers' future professional development (e.g. BERA-RSA, 2014; Sachs, 2016), the relationship between the quality of pre-service teacher inquiry and the quality of the teaching practice has not been explored. Previous research rarely takes the quality of pre-service teacher research assessed by teacher educators or researchers into account; rather, studies are more typically based on self-reporting methods such as questionnaires and interviews (e.g., Aspfors & Eklund, 2017, Kowalczuk-Walędziak et al., 2019; Niemi & Nevgi, 2014; Van der Linden et al., 2015). In addition, learning outcomes of pre-service teacher research in previous studies are based on self-reports. As mentioned previously, little empirical research on the impact of the specific pedagogies of teacher education, including actual learning outcomes of pre-service teachers, has been conducted (Van Veen, 2013). This dissertation offers additional scientific value by examining the correlation between the quality of inquiry and the quality of teaching and identifying four profiles of pre-service teachers using empirical methods. Third, this dissertation fills a knowledge gap in the perceived and actual learning outcomes of the introduced pre-service teacher inquiry and in the alignment of the purpose and value of it in intended, implemented and attained curriculum.

6 Limitations and suggestions for future research

To foster an accurate interpretation of the presented findings, we acknowledge some limitations of our studies. A first limitation is the generalisability of the results. We focused mainly on teacher education for primary schools in universities of applied sciences in the Dutch context and two samples from Melbourne in Chapter 4. The Dutch universities of applied sciences do not have a long research tradition, which is reflected in the limited research experience of the teacher educators and students. In addition, the Dutch universities of applied sciences focus on practice. Therefore, this study is not meant to be representative for all teacher education institutes, teacher educators or pre-service teachers in general. The generalisability could be enhanced by a comparison of the programme and its learning outcomes of pre-service teacher research and inquiry in secondary teacher education and teacher education in research universities. A curriculum study on the development of an inquiry stance in teacher education at research universities might shed light on the value of pre-service teacher research in academic settings and the learning outcomes. Thus far, studies addressing learning outcomes of pre-service teacher research in Dutch research universities are scarce and are mainly small-scale (e.g., Vrijnsen-de Korte et al., 2012). Although pre-service teachers in Dutch research universities are assumed to have more experience with research in a specific domain, their attitude toward pre-service teacher research appears not to be as positive as our findings (cf. Westbroek & Kaal, 2016). Reasons for this might simply be the time pressure to become a teacher. The teacher education curriculum at research universities is limited to a single year, which can lead to a perceived urgency to focus on teaching skills instead of research.

A second limitation of the studies reported in this thesis is a bias in participation. All pre-service teachers who participated had (almost) completed their capstone inquiry project, and some of those students were delayed due to their inquiry project. Perceptions of students who decided to quit before graduation were, however, not available and therefore could not be included in this study. Although this group is relatively small (<5%) and the reasons to quit vary widely, some members of this group might have quit because of the high demands of the pre-service teacher inquiry project. Their perceptions of pre-service teacher inquiry would not have influenced our main findings, but they could have contributed insights into the implementation of pre-service teacher inquiry and curriculum improvement. Therefore, we suggest involving exit evaluations of students who did not graduate in future research.

The third limitation is that the significant, positive relationship between pre-service teacher inquiry and teaching found in Chapter 4 is small and based on assessment scores from just one university of applied sciences. Repeating this method in other institutes of teacher education or using a proper experimental setup (as described previously) would increase the reliability of the findings.

This research examined a changing system, meaning that we gained insights into existing processes and correlations, while realising that the programmes and implementation of pre-service teacher inquiry are not carved in stone. Since the introduction of pre-service teacher inquiry, universities of applied sciences have evaluated and adapted their teacher education programmes regarding pre-service teacher inquiry. However, although teacher educators have professionalised and obtained more experience with the supervision of pre-service teacher inquiry, teachers with any experience in research or inquiry are still a minority in primary schools. Van den Bergh et al. (2017) nonetheless show that such teachers contribute to a culture of inquiry by their inquiry habit of mind and intention to use literature. Because of a growing number of teachers with pre-service teacher inquiry experience, we expect a change in research culture in primary schools, and possibly an increase of teachers who work in an inquiry-based manner. Perceptions of teachers and teacher educators in primary schools regarding pre-service teacher inquiry and the impact of these perceptions on the professional development of pre-service teachers would be worthwhile to examine as a follow-up study. School leaders and teachers can use several approaches to stimulate inquiry-based working in their schools to influence a research culture (Uiterwijk-Luijk et al., 2019). Continued research related to the impact of pre-service teacher inquiry on inquiry-based work of teachers and the research culture in primary schools should be longitudinal. We recommend future research on the inquiry stance of early career teachers, demonstrated by the application and development of inquiry competences over time.

The question of how to develop an inquiry stance of future professionals is important for not just teacher education but also for other professional bachelor's degree programmes in the Netherlands, such as nursing education, hotel management or physiotherapy, that are struggling to implement inquiry competences in a meaningful way. Therefore, we also recommend research into curriculum development and implementation of teaching and learning activities regarding an inquiry stance in other institutes of universities of applied sciences.

7 Implications for practice

Pre-service teacher inquiry, a form of practitioner research, which aims to understand and improve practices in the (pre-service) teacher's (educator's) own context (Borko et al., 2007), is not only the focus of this study; indeed, this dissertation has a similar focus, in that we examined the first author's own context (though in a broad sense), who is a teacher educator at one of the participating institutes for primary teacher education. Throughout this study, we have gained a deeper understanding of pre-service teacher inquiry, and our findings suggest three main implications for practice.

The first implication concerns aspects of curriculum design for development of an inquiry stance during teacher education and beyond. The main aspect is coherence in the various components of the programme. Overall constructive alignment among intended learning outcomes, teaching activities and assessment regarding an inquiry stance is important. Assessment should be focused not only on research knowledge and research skills but also and especially on characteristics of an inquiry habit of mind. Other forms of assessment than an inquiry report with a scoring rubric could be designed to show growth in the development of the integrated inquiry competences, the inquiry stance. The development of an inquiry stance should begin in the first year, or even on the first day, of teacher education by encouraging wondering and critical thought about children and educational practice. The inquiry stance provides and captures the lenses through which pre-service teachers learn to view and generate knowledge that guides practice (Cochran-Smith, 2009). Attention to inquiry competences, including an inquiry habit of mind, should be part of every course and all fieldwork experiences. For the development of the inquiry stance, a continuous interaction between existing knowledge and practice is essential; experiences from practice feed intentions and directions to deepen personal and professional knowledge. Increasing knowledge about educational concepts stimulates application of previous findings in practice. Drawing on our insights, we designed a model (Figure 6.1). In this model for curriculum design, improvement of practice and development of an inquiry stance reinforce each other and contribute to the development of personal and professional identity of pre-service teachers. The lemniscate illustrates the infinite nature of continuous professional development ~~–~~that is, lifelong learning (looking forward to being able to improve and looking back to be able to apply insights from others). Improvement of practice, above the 'waterline', is more tangible than the development of an inquiry stance and can be measured in various ways, such as observation of teaching skills and assessment of designed lessons. Improvement of

practice corresponds to an increase in task complexity, autonomy and responsibility. Development of an inquiry stance can be visualised by diving deeper. This development is evident in, for example, the type and depth of the questions pre-service teachers pose or the literature they use to substantiate their choices and validate their practice.

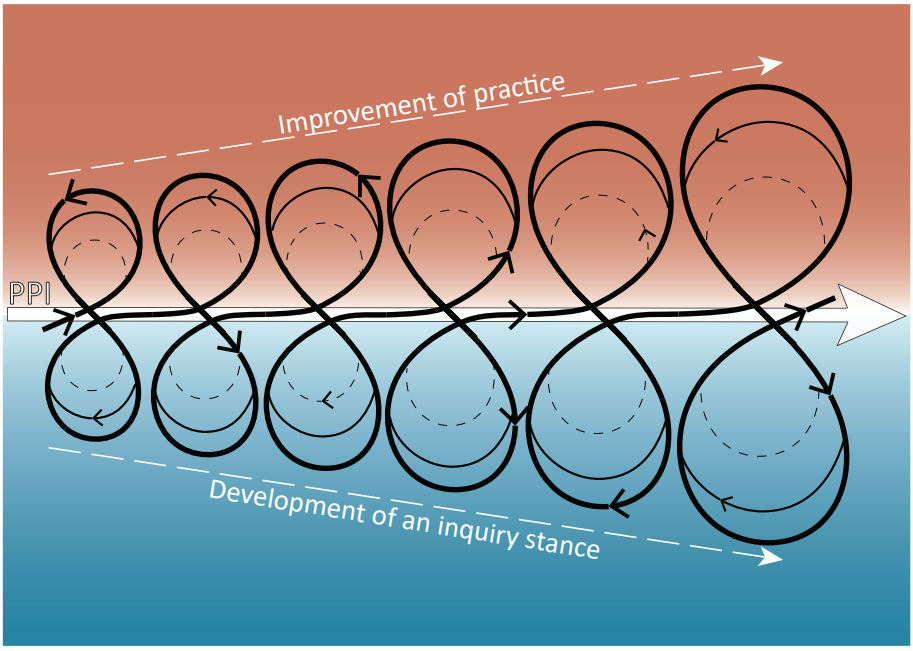


Figure 6.1 The lemniscate model for curriculum design of teacher education, in which improvement of the teaching practice (reaching higher) and development of an inquiry stance (diving deeper) contribute to development of personal and professional identity (PPI) of pre-service teachers by continuous interaction.

The pre-service teacher profiles described in Chapter 5 are visible in the model. High achievers take the largest loops for improvement of practice and development of an inquiry stance. Good practitioners will not reach the same depth 'beneath the waterline' as the high achievers but do ultimately take the loop in improvement of practice. Academic pre-service teachers, as described in Baan et al. (2019), have the potential to dive deeper and to show more methodological rigor in their practitioner research or inquiry.

This model may be more widely applicable; for example, we assume the development of personal and professional identity to continue in induction programmes for early-career teachers. Other professional bachelor's degree programmes at universities of applied sciences in the Netherlands, as well as post-graduate teacher education in research universities, experience the same tension in

the assessment of research projects and the intention to develop an inquiry stance aiming to improve practice and professional development. The model in Figure 6.1 might be transferable to these institutes of higher education. In those cases, specific application and description of levels of required inquiry competences and appropriate indicators for improvement of practice could be designed.

The second implication concerns teacher educators implementing teaching activities to stimulate the development of pre-service teachers' inquiry stance. Teacher educators should explicitly emphasise the intangible elements of inquiry, such as developing an inquiry habit of mind, in their communications with students more often. They should instigate curiosity, stimulate critical thinking and enable sharing of findings to improve practice. For example, a small-scale inquiry project for pre-service teachers about stimulating the inquiry habit of mind in children could provide the opportunity to deepen the concept of an inquiry habit of mind for these teachers and for them to reflect on the characteristics of their own inquiry habit of mind.

To achieve the intended coherence, all teacher educators must engage in frequent and ongoing dialogue about the purpose and value of pre-service teacher inquiry and its implementation. For appropriate feedback to pre-service teachers on the development of the inquiry competences, teacher educators require an in-depth understanding of inquiry versus research, knowledge about previous steps, about the intended ultimate learning outcomes and about possible next steps. Thus, they need insight into teaching activities to develop the inquiry stance throughout the entire programme, not just their own course. Furthermore, continuous professional development of teacher educators is required in their own inquiry stance and the supervision of pre-service teacher inquiry, including calibration sessions regarding assessment on development of the inquiry stance.

Reinforcing the culture of inquiry in primary schools is the third implication. In the Netherlands, a minority of primary schools were subsidised to combine practitioner research with the education of pre-service teachers for the purpose of school development (so-called academic primary schools). The connections of academic primary schools with teacher education institutes are better and the inquiry culture is more developed than regular primary schools (Van den Bergh et al., 2017). Reinforcement of the culture of inquiry in regular primary schools, and schools under pressure because of educational challenges, might improve the quality of education in the Netherlands. Networks between institutes for teacher education and primary schools focused on professionalisation of (pre-service) teachers, and improvement of

education by conducting practitioner research and inquiry together, might play an important role. The current Dutch policy tends to stimulate networks of universities and primary schools in which pre-service teachers are being educated, which means a widening of the supported target group. These networks can choose their own focus. In these days with many vacancies due to a shortage of teachers, primary schools might choose fast choices and quick solutions to educate pre-service teachers. Instead, a shared vision on the development of an inquiry stance and the culture of inquiry in the school is required for long-term improvement and a shift to inquiry-based working. Most important is the room for curiosity, sharing of findings and dialogue about educational improvement. More structured time for professional development of teachers by practitioner inquiry will increase the status of the profession and will attract more and different types of pre-service teachers. After graduation, the newly qualified teachers should be supported in building practical experience by induction programmes. After three to five years of teaching experience, all teachers should have the opportunity to engage in practitioner research or inquiry in professional learning communities, in which teacher colleagues and teacher educators participate with the aim to improve practice. Primary schools should stimulate teachers who want to continue academic professionalisation (and are capable of doing so) and maybe even obtain a master's degree. These teachers can be of added value to the professional learning communities and the reinforcement of the culture of inquiry.

The profiles we found indicate that teacher education could focus on a differentiated approach to educating pre-service teachers depending on their capability of and interest in conducting practitioner research and inquiry. 'Good practitioners' as well as 'high achievers' are necessary; all should be able to develop their inquiry stance in different ways, which can lead to different functions within schools. The combination of high requirements and possibilities for specialisation in teacher education and in primary schools will support lifelong learning and make the profession more attractive, which could in turn lead to a greater and more varied population of students and to more empowered teachers.

To conclude, in contrast to the intuitive expectation that pre-service teachers experience pre-service teacher inquiry as a burden and do not value inquiry, this study showed that most of them feel empowered because it gives them a broader framework and therefore understanding of their own teaching reality. So, as a teacher education pedagogy aimed at educating good and lifelong learning teachers, pre-service teacher inquiry is a very powerful one.

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

Nederlandse samenvatting

Inleiding

Anna: "*Waarom er onderzoek in de opleiding zit? Ik denk dat je veel kritischer wordt door echt te denken van: ja, maar wat heb ik gedaan waardoor het goed ging, of waardoor iets niet goed ging? Of wat gebeurt er in de school waardoor iets wel of niet goed gaat? Ik denk dat je daardoor wel veel kritischer wordt.*" Bram: "*Dat je niet zo maar stilstaat, dat je weet dat wat je er bij zoekt aan literatuur -heb ik ook het idee- dat je niet standaard zegt: oké, dit is het, en daar doe ik niks meer mee, zeg maar.*" Catelijn: "*En ook nieuwsgierig zijn, denk ik. Je wilt het weten. Je doet het niet omdat het moet, maar omdat je het echt wilt.*"

Dit is één van de reacties van aanstaande leraren in een focusgroep over studentonderzoek op de pabo. Praktijkonderzoek is al haast niet meer weg te denken uit de hbo-opleiding voor leraar basisonderwijs. Het is sinds ongeveer tien jaar een verplicht onderdeel van het curriculum. Dit was een indirect gevolg van de Bolognaverklaring in 1999 over de harmonisering van het hoger onderwijs in Europa. Op basis van deze afspraken zijn de Dublin descriptoren opgesteld, die de internationale kwalificaties of eindtermen voor bachelor, master en doctoraal niveau weergeven. Hoewel hiermee niet vastgelegd was op welke manier opleidingen aan deze kwalificaties moesten voldoen, bleken vrijwel alle hbo-opleidingen deze kwalificaties te gaan uitwerken en toetsen door middel van een afstudeeronderzoek (Griffioen, 2014).

Hogescholen hadden geen sterke onderzoekstraditie en docenten op hbo-lerarenopleidingen hadden in beperkte mate ervaring met onderzoek, waardoor de implementatie van onderzoeksactiviteiten in het curriculum complex bleek te zijn en het onderzoeksonderwijs aan universiteiten als voorbeeld werd genomen. De meeste lerarenopleiders waren aangenomen vanwege hun onderwijskwaliteiten en ervaring. Een deel had zelf geen enkele ervaring met onderzoek doen, noch met het begeleiden van studentonderzoek, waardoor veel opleiders zich moesten en gingen professionaliseren op dit vlak (Geerdink et al., 2015). De aandacht voor onderzoek in het curriculum werd nog eens versterkt doordat bij de accreditatie van opleidingen voor leraar basisonderwijs in 2015 de focus op de kwaliteit van het afstudeerwerk lag. Pas na deze accreditatieronde verschoof de vraag van 'Hoe moeten we onderzoek in ons curriculum implementeren?' naar 'Waarom moeten we onderzoek in ons curriculum implementeren? Krijgen we er betere leraren door?'.

Uit internationaal onderzoek blijkt dat studentonderzoek op lerarenopleidingen niet altijd een positieve connotatie heeft bij studenten en leraren,

omdat de uitvoering moeilijk is en veel tijd kost, die ook besteed had kunnen worden aan praktische trainingen (Joram, 2007; Maaranen, 2009; Puustinen et al., 2018; Ulvik, 2014). In wetenschappelijke literatuur over onderwijsonderzoek zijn tal van theoretische antwoorden op deze waarom-vraag te vinden: zo wordt aangenomen dat studentonderzoek de basis legt voor een leven lang leren (BERA-RSA, 2014; Sachs, 2016) en nodig is om de aanstaande leraren voor te bereiden op de veranderingen en de toenemende verscheidenheid aan leerlingen in het onderwijs van de 21e eeuw (Aspfors & Eklund, 2017; Hökkä & Eteläpelto, 2014; Menter, 2015). Verondersteld wordt dat onderzoekskennis en vaardigheden bijdragen aan de kwaliteit van het lesgeven zelf; leraren die praktijkonderzoek toepassen als professionele leerstrategie onderbouwen hun eigen handelen met kennis uit onderzoek en zijn gericht op verbetering van hun eigen onderwijspraktijk (Darling-Hammond, 2017; Livingston & Flores, 2017; Menter, Peters & Cowie, 2017). Daarnaast wijst onderzoek uit dat lerarenopleidingen een cruciale rol spelen in hoe aanstaande leraren naar onderzoek kijken en in het aanleren van onderzoeksvaardigheden (bijvoorbeeld Aspfors & Eklund, 2017; Maaranen, 2009; Munthe & Rogne, 2015; Van der Linden et al., 2012). Het afgelopen decennium is er internationaal steeds meer aandacht gekomen voor onderzoek naar de rol van studentonderzoek op lerarenopleidingen, maar dit is veelal gericht op universitaire opleidingen (bijvoorbeeld Aspfors & Eklund, 2017; Cochran-Smith et al., 2009; Flores, 2018; Gray, 2013; Ion & Iucu, 2016; Råde, 2019; Ulvik et al., 2017). Onderzoek naar studentonderzoek in hbo -en andere bacheloropleidingen is nog schaars en kleinschalig (bijvoorbeeld Baan et al., 2019; Munthe & Rogne, 2015; Van der Linde et al., 2012). Over het algemeen is onderzoek met betrekking tot de effectiviteit van een specifieke opleidingsdidactiek zeldzaam (Van Veen, 2013). Er bestaat wel veel onderzoek over lerarenopleidingen en opleidingspraktijken, waaronder het aanleren van het uitvoeren van praktijkonderzoek, (bijvoorbeeld Darling-Hammond et al., 2005; Grossman et al., 2009; Korthagen, 2010; Loughran & Hamilton, 2016), maar de relatie met de kwaliteit van de aanstaande leraren wordt nergens gelegd. Gezien de positieve veronderstellingen ten aanzien van de waarde van studentonderzoek en tegelijkertijd het gebrek aan inzichten over verkregen leeruitkomsten op hbo-niveau, richt dit proefschrift zich op de vraag wat de toegevoegde waarde is van studentonderzoek op de opleiding voor leraar basisonderwijs.

Sleutelconcepten

De aandacht voor studentonderzoek op lerarenopleidingen groeit wereldwijd. In appendix A staat een overzicht van artikelen over student- en docentonderzoek die in dit proefschrift gebruikt zijn met daarbij het jaartal, het type participant, de betrokken landen, de belangrijkste bevindingen en de toegepaste methoden. Naast dat dit overzicht een kennisleemte blootlegt over studentonderzoek in bacheloropleidingen, blijkt er een grote variatie te bestaan aan gebruikte termen, alsook begripsverwarring over een aantal sleutelconcepten.

Allereerst is er in het Engels een verschil tussen *research* en *inquiry*, terwijl in het Nederlands beide 'onderzoek' worden genoemd. Reid (2004, p.4) definieert *inquiry* als '*…a process of systematic, rigorous and critical reflection about professional practice, and the contexts in which it occurs, in ways that question taken-for-granted assumptions. Its purpose is to inform decision-making for action*'. De term *research* zou in het Nederlands het best vertaald kunnen worden met wetenschappelijk onderzoek. Het duidt op een proces waarbij kennis geconstrueerd wordt, die door andere wetenschappers en professionals toegepast kan worden. Kenmerkend bij wetenschappelijk onderzoek is de toepassing van een variatie aan kwalitatieve en kwantitatieve onderzoeksmethodieken, het gebruik van wetenschappelijke, internationale literatuur en de inzet van *peer review*. Soms voldoet *inquiry* aan deze kenmerken, maar meestal niet (Reid, 2004). Studentonderzoek in de opleiding voor leraar basisonderwijs is een vorm van *inquiry*. Het is gericht op onderwijsverbetering en voldoet aan andere eisen dan wetenschappelijk onderzoek. In het Nederlands is *inquiry* het best te vertalen als praktijkonderzoek (Vereniging hogescholen, 2015; Ros et al., 2018).

Het tweede betreft de term onderzoekend vermogen, een begrip dat als een soort eindkwalificatie gebruikt wordt in verschillende nationale beleidsdocumenten (bijvoorbeeld Onderwijsraad, 2014; Stuurgroep OPPO, 2018; Vereniging Hogescholen, 2015). Wat het onderzoekend vermogen precies inhoudt wordt zelden gedefinieerd en is nauwelijks wetenschappelijk onderbouwd. Op basis van de literatuur (bijvoorbeeld Aspfors & Eklund, 2017; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015) blijken de volgende aspecten van belang te zijn bij de ontwikkeling van het onderzoekend vermogen van (aanstaande) leraren: 1. Onderzoekskennis, 2. Onderzoeksvaardigheden, 3. Toepassing van onderzoeksresultaten en 4. Onderzoekende houding. Dit proefschrift beoogt op grond van bestaand onderzoek en de beschrijvingen in visie -en beleidsdocumenten van Nederlandse pabo's een heldere definitie van onderzoekend vermogen te verkrijgen.

Ten derde wordt het begrip *onderzoekende houding* gebruikt als vertaling van verschillende Engelse termen zoals *inquiry as stance* en *inquiry habit of mind*. Deze termen worden op hun beurt in internationale literatuur op verschillende manieren geïnterpreteerd en gebruikt (bijvoorbeeld Cochran-Smith & Lytle, 2009; Earl & Katz, 2006; Jacobs et al., 2015; Munthe & Rogne, 2015; Uiterwijk-Luijk et al., 2019). Cochran-Smith & Lytle (2009) hebben de term *inquiry as stance* geïntroduceerd als tegenhanger van *inquiry as project,* wat kortdurend en eindig is. *An inquiry habit of mind*, wat in dit proefschrift met *onderzoekende houding* vertaald wordt, is slechts een onderdeel van zowel *inquiry as project* als *inquiry as stance.* Dit laatste behelst namelijk ook het gebruiken van onderzoeksresultaten, het uitvoeren van praktijkonderzoek en het delen van bevindingen (Dana & Yendol-Hoppey, 2019). Specifieke kenmerken van een onderzoekende houding, die aansluiten op de context van dit proefschrift en daarom als uitgangspunt gebruikt zijn, zijn beschreven door Van der Rijst (2009): nieuwsgierig zijn, kritisch zijn, willen delen, willen vernieuwen, willen begrijpen en willen bereiken.

Algemeen doel en onderzoeksvragen

Het doel van dit promotieonderzoek was om inzicht te krijgen in de bijdrage van ontwikkeling van het onderzoekend vermogen aan zelf-gerapporteerde veranderingen in houding, kennis / inzicht, en vaardigheden van aanstaande leraren samen met verbeteringen in hun professionele praktijk, in lerarenopleidingen voor het basisonderwijs (pabo).

De volgende vier onderzoeksvragen staan centraal dit proefschrift:

1. Wat is het doel en de waarde van studentonderzoek in de pabo-opleiding?
2. Hoe is de ontwikkeling van het onderzoekend vermogen geïmplementeerd in het pabo-curriculum?
3. Wat zijn de belangrijkste ervaren en werkelijke leeruitkomsten van studentonderzoek bij de pabo?
4. Wat is de relatie tussen opvattingen over praktijkonderzoek, de kwaliteit van het studentonderzoek en de kwaliteit van het lesgeven van aanstaande leraren basisonderwijs?

Onderzoeksopzet

Dit promotieonderzoek bestaat uit vier deelstudies, waarbij het curriculummodel van Van den Akker (2013) als analysekader is gebruikt. In figuur 1.1 (p. 11) staat een overzicht van het hele proefschrift waarin de onderzoeksvragen en hun relatie tot het curriculummodel weergegeven staat. Van den Akker (2013) maakt onderscheid in drie verschijningsvormen van het curriculum, die ieder weer twee onderdelen bevatten. Het gaat om het *beoogde* curriculum, onderverdeeld in denkbeeldig en geschreven, het *geïmplementeerde* curriculum, onderverdeeld in geïnterpreteerd en uitgevoerd, en het *bereikte* curriculum, onderverdeeld in ervaren en geleerd.

De eerste deelstudie betreft een documentanalyse gericht op het beoogde curriculum waarbij 19 van de 25 pabo-opleidingen in Nederland participeerden. Het doel hierbij was om inzicht te krijgen in een theoretische en empirische invulling voor het begrip 'onderzoekend vermogen' voor lerarenopleidingen basisonderwijs. Dit is uitgevoerd in twee fasen: in de eerste fase is geanalyseerd wat de opleidingen beogen met praktijkonderzoek in hun curricula en in de tweede fase is gekeken op welke manier dit uitgewerkt is in de beschrijvingen van leerlijnen en programma-onderdelen ten aanzien van praktijkonderzoek. Hierbij is ook gekeken of de beschrijvingen van de beoogde leeruitkomsten, de onderwijsactiviteiten en de toetsing voldeden aan het principe van *constructive alignment* (Biggs & Tang, 2011).

De tweede en derde deelstudie richten zich beide op het *geïmplementeerde* en het *bereikte* curriculum. Het zijn *mixed-methods* studies waarin gegevens werden verzameld via vragenlijsten en focusgroepen, waarbij zowel lerarenopleiders als studenten, die in de laatste fase van de lerarenopleiding zaten, bevraagd zijn. Bij de tweede deelstudie waren de participanten van de focusgroepen afkomstig van acht verschillende Nederlandse hogescholen.

Om de resultaten in een breder verband te kunnen plaatsen en te leren van ervaringen uit andere contexten, is bij de derde deelstudie een vergelijking gemaakt met praktijkonderzoek aan twee lerarenopleidingen in Melbourne, Australië. De centrale vraag in deze studie ging over het doel en de waarde van praktijkonderzoek in de ogen van opleiders en studenten.

De laatste deelstudie, waarin het *bereikte curriculum* centraal staat, richt zich op de relatie tussen de kwaliteit van de afstudeeronderzoeken, de kwaliteit van het lesgeven en de perceptie van aanstaande leraren basisonderwijs ten aanzien van praktijkonderzoek. Hiervoor is gedurende vier jaar bij één hogeschool de vragenlijst 'perceptie praktijkonderzoek' uitgezet bij alle afstuderende studenten. De kwaliteit

van het lesgeven is eerst bepaald door 80 studenten in de eindstage te observeren met behulp van het ICALT lesobservatie-instrument en deze gegevens te vergelijken met de beoordeling op deze stage. Er bleek een significante relatie te bestaan tussen de observaties en de beoordeling van de eindstage, waarna de beoordeling van de eindstage als maat voor de kwaliteit van het lesgeven is gebruikt. Voor de kwaliteit van onderzoek is het cijfer van het afstudeeronderzoek als maat genomen.

Belangrijkste bevindingen

Op basis van de documentanalyse in de eerste deelstudie (hfst. 2) is een definitie voor onderzoekend vermogen opgesteld, bestaande uit zes aspecten:

> *Onderzoekend vermogen* is de bekwaamheid om onderzoek te doen én te gebruiken ter verbetering van de eigen beroepspraktijk door de integratie van kennis over het fenomeen onderzoek, kennis van onderzoek in het vakgebied, onderzoeksvaardigheden, een onderzoekende houding, onderzoekend handelen en het kunnen toepassen van onderzoeksresultaten in de praktijk.

Hierbij zijn er twee extra aspecten toegevoegd aan de vier aspecten die uit de theorie kwamen: *onderzoekskennis* is opgesplitst in *kennis over het fenomeen onderzoek* en *kennis van onderzoek in het vakgebied*, en daarnaast is ook het aspect *onderzoekend handelen* als onmisbaar aspect van onderzoekend vermogen benoemd. De definitie van onderzoekend vermogen blijkt hiermee overeen te komen met het begrip *inquiry as stance* (Cochran-Smith & Lytle, 2009; Dana & Yendol-Hoppey, 2019). Alle opleidingen beogen met onderzoek in het curriculum een verbetering van de onderwijspraktijk en vrijwel alle opleidingen benoemen hierbij het aspect *onderzoekende houding* als belangrijkste doelstelling. In de beschrijving van de leeractiviteiten en de toetsing, die bij alle opleidingen de vorm heeft van een onderzoeksverslag, ligt de focus echter vooral op *kennis over het fenomeen onderzoek* en *onderzoeksvaardigheden*. Kenmerken van een *onderzoekende houding* worden slechts in de helft van de gevallen in onderwijsactiviteiten beschreven en in toetsing ontbreekt dit aspect meestal helemaal óf blijkt alleen vereist te zijn voor een hogere beoordeling. Ook de aspecten *onderzoekend handelen* en *het toepassen van onderzoeksresultaten in de praktijk* zijn onderbelicht in beschreven leerlijnen, terwijl sommige opleidingen dit expliciet in hun doelstellingen hebben staan.

De tweede en derde deelstudie (hfst. 3 en 4) tonen aan dat zowel studenten aan de lerarenopleiding als hun lerarenopleiders, in Nederland én Australië, ervan overtuigd zijn dat de ontwikkeling van onderzoekend vermogen bijdraagt aan de ontwikkeling van betere leraren. De overeenkomsten met betrekking tot percepties ten aanzien van studentonderzoek tussen de studenten van de twee verschillende landen, zijn groter dan de verschillen. Hetzelfde geldt voor de lerarenopleiders. De aanstaande leraren hebben positieve opvattingen en een positieve houding ten aanzien van praktijkonderzoek: zij vinden dat praktijkonderzoek belangrijk en interessant is en dat het een goede manier is om te professionaliseren. Vrijwel alle studenten geven aan dat het afstudeeronderzoek tevens het moeilijkste onderdeel vormde van de hele studie, wat daardoor ook momenten van frustratie en andere negatieve gevoelens opleverde. Na afronding van het afstudeeronderzoek overheerst het gevoel van trots over het bereikte resultaat. De belangrijkste reden dat aanstaande leraren positief zijn over praktijkonderzoek is dat zij zich gesterkt voelen in hun eigen kunnen en autonomie. Ze geven aan dat ze zich al tijdens het uitvoeren van het afstudeeronderzoek door collega's op de stageschool serieus genomen voelen als onderwijsprofessional. Tijdens het werken aan het praktijkonderzoek specialiseren zij zich op een bepaald vlak, waardoor zij de behoefte voelen om hun theoretische en praktische inzichten te delen en het gesprek aan te gaan met collega's over onderwijs. Na afronding voelen zij zich gesterkt om bijvoorbeeld schoolbeleid ter discussie te stellen en om onderzoeksresultaten van anderen te gebruiken om hun eigen onderwijs te verbeteren. Zowel de aanstaande leraren als de lerarenopleiders denken dat ze goed in staat zijn om praktijkonderzoek te verrichten. Toch heeft meer dan een derde van de aanstaande leraren niet de intentie of verwachting om nog iets met onderzoek te doen in een toekomstige baan. De belangrijkste redenen hiervoor zijn: 1. De focus in het werk zal, zeker de eerste jaren, op het lesgeven zelf liggen, 2. De formele manier waarop praktijkonderzoek aangeleerd en getoetst is in de opleiding is tijdrovend en veeleisend, en 3. Het gebrek aan een onderzoekscultuur op de meeste basisscholen.

Uit de tweede deelstudie (hfst. 3) blijkt dat lerarenopleiders en studenten niet hetzelfde beeld hebben van hoe het onderzoekend vermogen gedurende opleiding ontwikkeld is. De studenten hebben het gevoel dat de leeractiviteiten in de opleiding vooral gericht waren op het aanleren van onderzoeksvaardigheden. Ze vinden het lastig om activiteiten te benoemen waarbij de ontwikkeling van een onderzoekende houding centraal stond, terwijl opleiders tal van voorbeelden uit hun eigen onderwijs kunnen opnoemen. De studenten benoemen een aantal sleutelfactoren

voor een goede implementatie van praktijkonderzoek in de opleiding voor leraar basisonderwijs: het is van belang dat er een duidelijke leerlijn praktijkonderzoek is over de jaren heen en de kwaliteit van de onderzoeksbegeleiders is cruciaal voor het leerproces. Een duidelijke link van het praktijkonderzoek naar de eigen onderwijssetting en de mogelijkheid om een eigen onderwerp te kiezen, blijken motiverend te werken.

Uit de laatste deelstudie (hfst. 5) blijkt dat er een positieve correlatie is tussen de kwaliteit van onderzoek en de kwaliteit van lesgeven van aanstaande leraren. Deze relatie is verder uitgediept. Een clusteranalyse resulteerde in vier verschillende studentprofielen: hoogpresteerders, praktijkkanjers, middenmoters en laagpresteerders. Over het algemeen tonen studenten in alle profielen een positieve perceptie ten aanzien van praktijkonderzoek: ze vinden het een belangrijk en een interessant onderdeel van de studie en vertrouwen erop dat ze zelf in staat zijn om onderzoek te doen. Ook geven studenten in alle profielen aan dat zij door het praktijkonderzoek in de opleiding niet alleen de link tussen theorie en praktijk zijn gaan zien, maar deze ook zijn gaan waarderen. Opvallend is dat studenten in de vier profielen verschillende antwoorden geven op de vraag wat voor hun de belangrijkste leeruitkomst was van praktijkonderzoek in het curriculum. De hoogpresteerders realiseren zich dat de ontwikkeling van de onderzoekende houding, gekarakteriseerd door nieuwsgierigheid, kritisch denken, willen delen en iets willen bereiken, de belangrijkste leeruitkomst is. De middenmoters en de praktijkkanjers noemen het kunnen doen van praktijkonderzoek als belangrijkste leeruitkomst. De laatstgenoemde groep noemt hierbij ook nog de groei van kennis over het onderzoeksonderwerp. De laagpresteerders zien de toepassing van bestaand onderzoek in hun eigen praktijk als belangrijkste leeruitkomst.

Algemene conclusies

De belangrijkste conclusie van dit proefschrift is dat praktijkonderzoek in het curriculum van de lerarenopleiding voor basisonderwijs een toegevoegde waarde heeft (hfst. 2,3,4 en 5). Praktijkonderzoek op de lerarenopleiding heeft niet als doel om onderzoekers op te leiden, maar om leraren met een goed ontwikkeld onderzoekend vermogen af te leveren. De toegevoegde waarde van de ontwikkeling van onderzoekend vermogen in het curriculum van de lerarenopleiding basisonderwijs is dat aanstaande leraren hierdoor gesterkt worden om hun eigen onderwijspraktijk

te verbeteren: ze zijn gestimuleerd om nieuwsgierig en kritisch te zijn, ze zijn aangemoedigd om niet slaafs methodes te volgen en staan stevig genoeg in hun schoenen om bijvoorbeeld schoolbeleid te bevragen, ze zijn in staat om resultaten van eerder onderzoek te interpreteren en toe te passen op hun eigen onderwijssituatie, en bovendien willen ze bevindingen uit eigen praktijk graag delen met collega's.

Dit proefschrift toont aan dat er een positieve correlatie bestaat tussen de kwaliteit van het afstudeeronderzoek en de kwaliteit van de eindstage (hfst. 5). Er is meer onderzoek nodig om vast te kunnen stellen wat precies de onderliggende factoren en processen zijn die deze relatie bepalen en beïnvloeden. De studenten in de vier studentprofielen, die op basis deze correlatie gedefinieerd zijn, verschillen in inzichten over de belangrijkste leeruitkomst ten aanzien van onderzoek in de opleiding. Alleen de percepties van de hoogpresteerders komen overeen met wat opleidingen in de eerste plaats beogen met het onderzoek in de opleiding: het ontwikkelen van een onderzoekende houding (hfst. 2 en 5).

Tot slot beoogt geen enkele opleiding voor leraar basisonderwijs om onderzoekers op te leiden. Echter, de manier waarop studenten de onderzoeksactiviteiten ervaren en vooral de manier waarop getoetst wordt -namelijk met een onderzoeksverslag met beoordelingsrubrics gericht op onderzoeksvaardigheden- wekt wel die suggestie. Door meer nadruk te leggen op de ontwikkeling van onderzoekend vermogen, met als belangrijk aspect de onderzoekende houding, in plaats van de nadruk op het doen van praktijkonderzoek, kunnen lerarenopleiders bijdragen aan toekomstige leraren die kritisch en nieuwsgierig zijn en die *evidence informed* werken.

Wetenschappelijke bijdrage

Dit proefschrift draagt bij aan bestaande wetenschappelijke kennis op het gebied van praktijkonderzoek op lerarenopleidingen; de vier studies samen genereren kennis over leeruitkomsten met betrekking tot praktijkonderzoek en over het doel en de waarde ervan in beoogd, geïmplementeerd en bereikt curriculum van lerarenopleidingen basisonderwijs. De focus op de hbo-bacheloropleiding voor leraren basisonderwijs is zeldzaam in dit vakgebied. Zoals te zien is in appendix A, is het meeste onderzoek over praktijkonderzoek in andere landen gericht op studenten in een master- of post-doctorale opleiding (e.g., Aspfors & Eklund, 2017; Darling-Hammond, 2017; Råde, 2019; Toom et al., 2010), op leraren (e.g., Cochran-Smith & Lytle 2009; Sachs, 2016; So, 2013) of lerarenopleiders (e.g., Jacobs et al., 2015; Tack &

Vanderlinde, 2014). Onze bevindingen komen grotendeels overeen met resultaten uit die studies, maar opvallend is de positieve houding van studenten ten opzichte van onderzoek en de waarde voor hun praktijk die zij hierbij benoemen. Ten tweede is de relatie tussen de kwaliteit van praktijkonderzoek en de kwaliteit van het lesgeven nog zelden onderzocht en berustten de bestaande bevindingen voornamelijk op zelf-rapportages, zoals vragenlijsten en interviews (e.g., Aspfors & Eklund, 2017, Kowalczuk-Walędziak et al., 2019; Niemi & Nevgi, 2014; Van der Linden et al., 2015). Empirische studies over het effect van bepaalde didactische aanpakken en keuzes van lerarenopleidingen op de kwaliteit van aanstaande leraren is schaars (Van Veen, 2013). Dit proefschrift levert een eerste wetenschappelijk inzicht op over de correlatie tussen praktijkonderzoek en de kwaliteit van lesgeven.

Beperkingen en suggesties voor toekomstig onderzoek

Om de bevindingen van dit proefschrift goed op waarde te kunnen schatten, is het van belang om de beperkingen ook onder ogen te zien. Ten eerste zijn de gevonden resultaten niet generaliseerbaar voor lerarenopleidingen in het algemeen. Drie van de vier studies hebben betrekking op Nederlandse lerarenopleidingen voor basisonderwijs op hbo-niveau, die een beperkte onderzoekstraditie hebben en een sterke focus op praktijkonderdelen. Om de generaliseerbaarheid te verhogen zou gelijksoortig onderzoek uitgevoerd kunnen worden op tweedegraads lerarenopleidingen, alsook op universitaire lerarenopleidingen. Vergelijkbaar onderzoek over leeruitkomsten van praktijkonderzoek bij studenten aan universitaire lerarenopleidingen is schaars en kleinschalig (e.g., Vrijnsen-de Korte et al., 2012). Een tweede beperking betreft de groep studenten die aan dit onderzoek hebben meegewerkt. Alle participanten zaten in de laatste fase van hun opleiding. De keuze hiervoor is gemaakt op grond van hun ervaring met de complete leerlijn onderzoek. Percepties van studenten die voor het eind van hun opleiding gestopt zijn, zijn niet meegenomen omdat die niet voorhanden waren. Hoewel dit een kleine groep is (<5%), zou het kunnen dat het afstudeeronderzoek een rol heeft gespeeld in hun beslissing te stoppen. In een vervolgonderzoek zou het interessant zijn om ook de percepties ten aanzien van onderzoek van deze groep mee te nemen. Ten derde is de gevonden positieve relatie tussen de kwaliteit van praktijkonderzoek en de kwaliteit van lesgeven significant maar klein en enkel gebaseerd op de eindcijfers van één opleiding. Om deze relatie beter te begrijpen is het van belang om hier

vervolgonderzoek aan te doen. Hierbij zou dan gebruik gemaakt kunnen worden van een experimentele opzet met meerdere lerarenopleidingen, waarbij zowel de kwaliteit van de ontwikkeling van onderzoekend vermogen als de kwaliteit van het lesgeven worden bestudeerd op grond van meerdere relevante factoren.

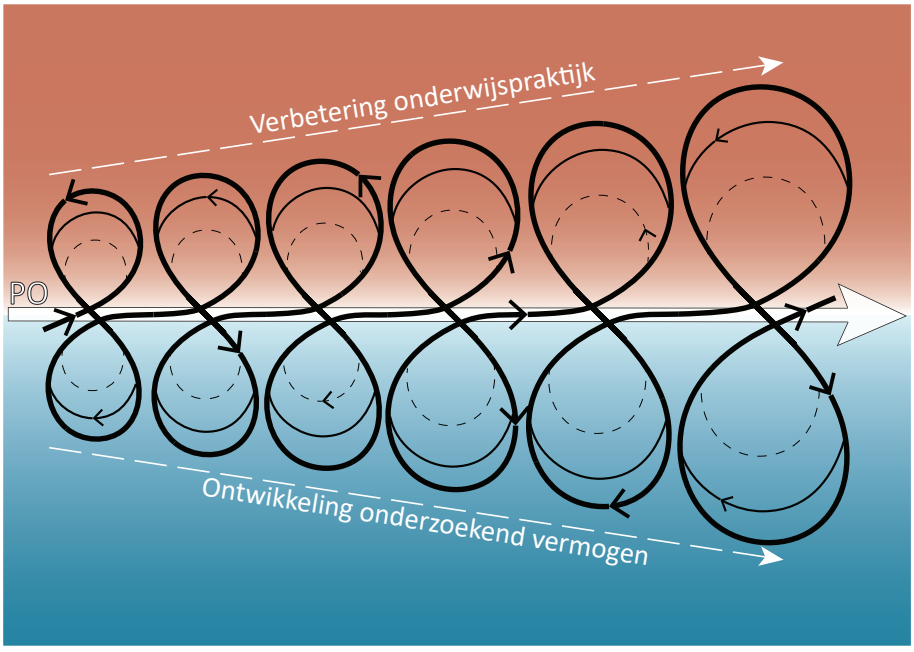
Sinds praktijkonderzoek geïntroduceerd is op hbo-opleidingen voor leraar basisonderwijs wordt dit onderdeel steeds verder aangescherpt. Hoewel lerarenopleiders zich geprofessionaliseerd hebben in het uitvoeren en begeleiden van onderzoek (Geerdink et al., 2015), zijn er nog relatief weinig leraren in het basisonderwijs met onderzoekservaring. Onderzoek van Van den Bergh et al. (2017) toont aan dat de leraren, die wel enige onderzoekservaring hebben, door hun onderzoekende houding en gebruik van eerder onderzoek bijdragen aan een onderzoekscultuur op basisscholen. Door de huidige instroom van pas-afgestudeerde leraren die in hun studie praktijkonderzoek hebben gedaan, zou de onderzoekscultuur op basisscholen kunnen worden versterkt. Schoolleiders blijken hier ook een belangrijke rol in te spelen (Uiterwijk-Luijk et al., 2019). Vervolgonderzoek naar het effect van de toename van leraren met onderzoekservaring op de onderzoekscultuur op basisscholen zou zinvol zijn. Dit geldt ook voor longitudinaal onderzoek naar de ontwikkeling van onderzoekend vermogen van leraren in verschillende fases van hun loopbaan in het onderwijs.

Tot slot is de ontwikkeling van onderzoekend vermogen niet alleen van belang voor de curricula van lerarenopleidingen, maar ook voor andere hbo-opleidingen. Bij opleidingen zoals verpleegkunde, hogere hotelschool of fysiotherapie is de waarde en rol van praktijkonderzoek in het curriculum nog niet geheel uitontwikkeld. Ook deze opleidingen beogen innovatieve professionals met onderzoekend vermogen op te leiden (Hogeschoolraad, 2014). Een aanbeveling is om op basis van dit proefschrift onderzoek te doen naar curriculumontwikkeling met betrekking tot de ontwikkeling van onderzoekend vermogen bij andere hbo-opleidingen en het effect hiervan op de kwaliteit van de startende professionals.

Implicaties voor de praktijk

De inzichten die voortgekomen zijn uit dit promotieonderzoek leiden grofweg tot implicaties voor de praktijk in drie deelgebieden. Het eerste deelgebied betreft curriculumontwerp met betrekking tot de ontwikkeling van onderzoekend vermogen. Hierbij is het van belang om aandacht te besteden aan *constructive alignment* (Biggs

& Tang, 2011): beoogde leeruitkomsten voor de ontwikkeling van onderzoekend vermogen moeten op één lijn liggen met leeractiviteiten en toetsing. De toetsing zou zich niet alleen moeten richten op onderzoekskennis -en vaardigheden, maar ook op de ontwikkeling van de onderzoekende houding. Andere toetsvormen dan een onderzoeksverslag moeten hiervoor nog ontwikkeld en uitgeprobeerd worden. De ontwikkeling van het onderzoekend vermogen start idealiter op de eerste dag van de lerarenopleiding en vormt een natuurlijk element door de gehele opleiding heen in alle programma-onderdelen. Voor de ontwikkeling van het onderzoekend vermogen is een constante wisselwerking tussen theoretische inzichten en praktijk nodig: de waarnemingen en ervaringen uit de praktijk zorgen voor de stimulans en richting van de theoretische verdieping, de toename aan kennis over onderwijskundige concepten draagt bij aan de mogelijkheid om bevindingen uit eerder onderzoek toe te passen in de praktijk. Het lemniscaatmodel voor curriculumontwerp, dat weergegeven is in figuur 1, sluit aan bij deze inzichten. In dit model versterken praktijkervaringen en ontwikkeling van onderzoekend vermogen elkaar en dragen zo



Figuur 1 Het lemniscaatmodel voor curriculumontwerp bij lerarenopleidingen, waarin verbetering van de eigen onderwijspraktijk en ontwikkeling van onderzoekend vermogen door continue wisselwerking bijdragen aan de professionele ontwikkeling (PO) van aanstaande leraren.

bij aan de ontwikkeling van de persoonlijke professionele identiteit van aanstaande leraren. De lemniscaat illustreert de oneindige aard van professionele ontwikkeling en een leven lang leren; steeds vooruitkijken om te kunnen verbeteren en terugkijken om eerdere inzichten van anderen en jezelf toe te kunnen passen. De verbetering van praktijk, boven 'de waterlijn', kan in een opleiding bewerkstelligd worden door beroepsopdrachten, die gedurende de opleiding complexer worden en steeds meer autonomie en verantwoordelijkheid van de student vragen. De ontwikkeling van onderzoekend vermogen uit zich in de ontwikkeling van alle zes aspecten, bijvoorbeeld het gebruik van steeds meer perspectieven om een praktijkprobleem te benaderen of het niveau van de geraadpleegde literatuur en analysemethoden. Dit wordt in het model gevisualiseerd door het steeds dieper duiken beneden 'de waterlijn'.

Het model is breder inzetbaar, bijvoorbeeld om de persoonlijke professionele ontwikkeling na het afstuderen in de inductiefase weer te geven of wellicht als curriculummodel voor andere hbo-opleidingen, waarbij ook de wisselwerking tussen praktijkverbetering en ontwikkeling van onderzoekend vermogen zou kunnen bijdragen aan professionele ontwikkeling van studenten.

Het tweede deelgebied is gericht op lerarenopleiders, omdat zij een essentiële rol spelen in de vertaling van het beoogd curriculum naar het geïmplementeerde curriculum en zo invloed te hebben op het bereikte curriculum. Wat betreft de ontwikkeling van het onderzoekend vermogen blijkt er teveel nadruk te liggen op het aanleren en toetsen van onderzoeksvaardigheden en is de ontwikkeling van de onderzoekende houding voor studenten niet duidelijk genoeg. Naast de voorbeeldrol, die veel opleiders al denken te tonen door hun nieuwsgierigheid en kritische houding, blijkt het van belang te zijn om deze onderzoekende houding te expliciteren. Hiernaast is het van belang dat opleiders regelmatig met elkaar in gesprek gaan over het doel en waarde, alsook over passende leeractiviteiten met betrekking tot de ontwikkeling van onderzoekend vermogen. Om studenten adequaat te kunnen begeleiden bij hun ontwikkeling van onderzoekend vermogen, is overzicht over het curriculum nodig. Hiernaast is het van belang dat lerarenopleiders ook werken aan de ontwikkeling van hun eigen onderzoekend vermogen, bijvoorbeeld door het delen van hun praktijkervaringen en het zelf doen van praktijkonderzoek. Hogescholen zouden hier meer ruimte en tijd voor kunnen en moeten reserveren.

Het versterken van de onderzoekscultuur op basisscholen is de derde deelgebied voor implicaties op basis van de bevindingen uit dit proefschrift. Een derde tot wel de helft van de participerende aanstaande leraren gaf aan dat ze niet verwachtten om nog

iets met onderzoek te doen in hun toekomstige baan in het onderwijs. Een belangrijke reden hiervoor vormt het gebrek aan onderzoekscultuur op veel basisscholen. Dit geldt niet voor academische basisscholen, die met lerarenopleidingen samenwerken aan schoolontwikkeling en een subsidie hebben ontvangen om de onderzoekscultuur te verbeteren. Helaas is dit maar een klein deel van alle basisscholen. Juist een versterking van de onderzoekscultuur in reguliere scholen en scholen die onder druk staan door bijvoorbeeld een leerlingpopulatie met veel laagopgeleide ouders of veel leerlingen met een taalachterstand, kan wellicht onderwijsverbetering tot gevolg hebben. Professionele leergemeenschappen waarin lerarenopleiders, leraren en aanstaande leraren gezamenlijk praktijkonderzoek doen met als doel schoolontwikkeling, kunnen onderwijsverbetering in Nederland tot stand brengen. Ruimte voor deze vorm van professionalisering van leraren zal doorgroeimogelijkheden binnen het vak bewerkstelligen en wellicht ook nog de status van het beroep verhogen. Hiermee kan praktijkonderzoek het beroep aantrekkelijker maken voor een bredere groep mensen en zo bijdragen aan het terugdringen van lerarentekorten.

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PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

Appendices

Appendix A

An overview about previous research into pre-service teacher research and practitioner research

Authors	Teacher/ PST / TEs	Ma/ Ba	Primary /Sec / EC	Country	Topic	Method & Number of participants
Aspfors & Eklund 2017, JET	NQT	Ma	P	Finland	Perceptions of newly qualified teachers on research- based teacher education. Three areas: personal development, teacher professional competence and research competence	Interviews NQT (n=10)
Baan et al., 2018, PDiE	NQT	Ba	P	NL	Involvement of inquiry-based working by academic NQT. Use of learning outcomes from PST research after TE in practice: systematic reflection, use of literature, and conducting research	Interviews teachers (n=10) and their school leaders, observations of team meetings
Baan et al., 2019b, EJTE	PSTs	Ba	P	NL	Differences academic vs non-academic. Learning outcomes: inquiring attitude, motivation to use and conduct research	Curriculum, questionnaires (n=260), interview PST (9)
Baan et al 2019a, TaTE	T		P	NL	Involvement of inquiry-based working teachers academic vs non academic	Questionnaire (n=201)
Butler & Schnellert 2012, TaTE	T		P/S	Can	Collaborative inquiry in teacher PD by communities of inquiry, aiming higher student outcomes o	Interviews (n=18), lit assessments, doc and artifacts, fieldnotes meetings and classroom visits
Bjuland & Mosvold, 2015, TaTE	PST	Ma	S	Norway	Implementation of Lesson study in teacher education (mathematics)	Group interviews (n=3), supplementary: observations mentoring session and research lesson
Byman et al., 2009, ERE	PST	Ma		Finland	Perceptions of pre-service teachers toward research; comparison of research-based teacher education and school-based PSTs.	Surveys (n=168 and n=116)
Castle, 2006, TaTE	T		P	USA	Autonomy by pedagogical research by teachers	Interviews (n=3)

Appendix A Continued

Cochran-Smith et al 2009, AiTE	PST	Ma	P / S	USA	Learning outcomes PSTs and pupils action research; Strongest: question connected to a larger theoretical or conceptual vision about teaching and learning, and awareness inquiry offers a springboard for learning about learning. Weaker papers: no flexibility; stick to plan- no transfer & continuation	*(Mixed: quantitative, rubric & qualitative content analysis of RQs in 46 research projects), in-depth content analysis of n=12 projects
Dobber et al., 2012, TaTE	PST	Ma	S	NL	PST collaborative research, focussed on the research skills and collaboration processes	*In depth qualitative case study (n=2x3), video and stimulated recall interviews
Dunn et al., 2008, TaTE	PST	Ba	EC	Australia	Preparing research- skilled graduates in EC profession	Focus groups (n= 6, 6 and 12)
Elm & Nordqvist, 2019, EJTE	T		EC	Sweden	Research circle, tool for PD and preschool development, collaborative, improved reflection, awareness of scientific base of practice. Need for collaboration between researchers and teachers	Written entries of 12 preschool teachers, interviews with 8 teachers
Ermeling, 2010, TaTE	T		S	USA	Improvement of teachers instructions (practice) by collaborative inquiry	Observation meetings and classroom lessons- looking at specific effect (n=4)
Esposito & Smith, 2006, TEQ	T / io	Ma	P	USA	From reluctant teacher to empowered – action research; Learning outcomes: flexibility and persistence, empowerment and sharing with colleagues +school community	Case study of one Teacher / Master student (n=2)
Flores 2018, JET	PST	Ma		Portugal	Linking teaching and research in ITE	Description curriculum
Geerdink et al., 2016, TTTP	TE		P, S	NL	Professional development in research and supervising pre-service teacher research	Interviews (n=12)
Gitlin et al., 1999, TaTE	PST		P,S	USA	Inquiry oriented teacher education and pre-service teachers' perception toward research	Questionnaires (n=37) and Interviews (n=16)
Gray, 2013 EJTE	TEs	Ma	S	UK	Induction of research techniques as a means of exploring practical challenges lead to knowledge and ownership (expertise)	Case studies (n=4)

Appendix A Continued

Griffioen, 2018, EaTI	-	Ba		NL	Students 'research attitudes – during the study	Survey (n=2192)
Guilbert et al., 2016, APJTE	PST	Ma	EC,P,S	Australia	A study of pre-service teachers' research perceptions, research experience, and motivation	Survey (n=235) and focus groups (n=7 + 4)
Hökkä & Eteläpelto, 2014, JTE	TEs		P/S	Finland	Teacher educators' individual and collective agency. This must be supported to enhance their continuous professional learning and organizational change.	Discursive approach; interviews and research diary of first author
Imants et al., 2010, PS	T	Ba	P	NL	Research-related activities in the daily work of teachers.	
Ion & Iucu, 2016, EJTE	T	Ma/ PhD		Romania	Impact of postgraduate studies on teachers' practice. Learning outcomes: conducted research has personal impact and on teaching – research utilisation	Questionnaire (n=161)
Jacobs et al., 2015, AiTE	TE	PhD		USA	Role of practitioner inquiry for doctoral teacher educators	Artifacts, reflections, fieldnotes, interviews (n=14)
Joram, 2007, TaTE	T/PST/ TEs	Ba	P / EC	USA	Clashing epistemologies- during study; findings: students want to teach not to conduct research	Interviews with Vignets (PST n=7, T n=9, TEs n=7)
Jyrhämä et al., 2008, EJTE	PST	Ma		Finland	Perceptions of research-based teacher education of Finish pre-service teachers	
Kowalczuk et al., 2019, TE	NQT	Ma	P/ S	5x EU	Thesis work and professional development- Learning outcomes: positive, understanding relationship research and practice; no overall intention to continue	Survey (n=429)
Krokfors et al., 2011, TE	TE	Ma		Finland	Investigation of Finnish teacher educators 'view on research-based teacher education	Survey (n=33) and interviews (n=8)
Kroll, 2005, STE	PST	Ma		USA	Making Inquiry a Habit of Mind: Learning to use inquiry to understand and improve practice on day-to-day issues by PSTs	Case study (n=13)
Leeman & Wardekker, 2014, TTTP	T		S	NL	Professionalization by a course on conducting teacher research	Case study, interviews (n=26)
Leavy & Hourigan, 2016, TaTE	PST		P	Ireland	Using lesson study to support knowledge development in initial teacher education	Collected case study of five cases of teaching , enacted within real-life context (N=25)

Appendix A Continued

Maaranen, 2009	NQT	Ma		Finland	Thesis and professional development; learning outcomes : adjusting teaching, interaction skills, self-confidence, and criticalness	Interviews PST (23)
Maaranen & Krokfors, 2008, JET	T / NQT	Ma	P?	Finland	Value conducting research; integration theory and practice in TE, but not in research project. Societal effect: wanting to share	Survey (35) & interviews (23)
Meijer et al., 2016, TiHE	T	Ma		NL	Teachers' inquiry-based attitude;	Surveys; N=44 and n=475
Munthe & Rogne, 2015, EJTE	TE / PST	Ba	P/ S	Norway	Experiences of research-based TE; Results indicate that ITE programs emphasize research, but teacher-led more than student engagement.	Interviews TE (N=36) and PST (N=36)
Næsheim et al., 2019, EJTE	TE / PST/ T		P / S	Norway	Lesson study as professional tool to strengthen collaborative inquiry	Time-lagged design experiment (N TE=18, N PST=56, N T=17)
Niemi & Nevgi, 2014, TaTE	PST	Ma	P/ S	Finland	Experiences PST research vs professional competences	Questionnaires PST, clusteranalysis (N=287)
Pareja Roblin et al., 2014, EJTE	T		P/ S	USA,Can, others	Linking research and practice in Teacher communities	Analyses 12 projects with Teacher Communities
Penuel et al., 2017, AERA	Lead			USA	How school and district leaders access, perceive, and use research	Survey (N=733)
Ponte et al., 2004, TTTP	TEs		S	USA, UK Australia	Action research learning by doing – commitment, communication and continuity in a teachers' team is important	Case study three institutes, Interviews with TE and deans (n=9,n=5, n=3))
Puustinen et al., 2018, TaTE	PST	Ma	P/ S	Finland	Perceptions of research-based TE; not always integration of theory and practice, or to teachers' work, need for practical education	Cluster analysis, survey (N=905)
Råde, 2014 EJTE	TE-curric	Ma		EU; Sweden	Final thesis model and link to academy or teaching profession; portfolio, thesis, and action research	Systematic review
Reis-Jorge 2007, TaTE	T	Ba		UK	Perceptions of teacher research; highly -structured nature of academic format conducting research may fall short transferability to skills practice	Questionnaires, interviews, field notes, (n=9)

Appendix A Continued

Rinke & Stebick, AiTE	TEs/ PST	Ba	P/ S	USA	Action research: Evolution of a teacher inquiry culture – TEs: successful for means of critical thinking; PSTs initially viewed it as artificial and disconnected of practice – because of formal written part	Case study, Score final reports, interviews midpoint and final (n=12), analyses of student and instructor contributions on line
Schulz & Mandzuk, 2005, TaTE	PST	Ma	EC/ P/ S	Canada	Understanding and experiences with inquiry newly in the TE program. Learning outcomes: improve practice, support teacher development and contribute to educational community	Focus groups (n=10)
Smith et al., 2009, TaTE	T		S	UK	Teachers as researchers in a major research project; 6 teacher researchers interviewed in total 32 colleageus and followed 13 of them.	N=6, n=32, n=13
So, 2013, TaTE	T		P/S	South Korea	Knowledge construction among teachers within a community based on inquiry as stance	Case study of p-teachers and S-teachers (n=3) N=5
Tack & Vanderlinde, 2014, BJES	TE			Belgium	Teacher educators' professional development: Towards a typology of teacher educators' researcherly disposition.	Interviews (n=20)
Taylor, 2017, TaTE	T / TEs	Ma	P	USA	How teachers become teacher researchers; narrative as tool for teacher identity construction	Case study, (n=6, + 1 TE), observation, fieldnotes, blog, interviews
Toom et al., 2010, EJE	PST / TE	Ma		Finland	Experiences of research-based teacher education; a comparison between traditional and research based, which aims pedagogically-thinking, reflective and inquiry-oriented teachers. Resulting in a high status of teaching profession	Surveys (n=113, n=165, n=13) and interviews (n=8)
Uiterwijk-Luik et al., 2019a, EMAL	Lead		P	NL	Insight into the interplay between school boards, school leaders and teachers regarding inquiry-based working. Multiple ways to encourage; top-down and bottom-up.	Case study with Interviews (n= 10 Lead, n=11 T), observations and document analysis, after a survey
Uiterwijk-Luijk et al., 2019b;TaTE	T		P	NL	Relationship teachers inquiry-based work and students' curiosity and critical thinking skills.	Mixed-methods: survey (n=249) & case study; interviews (n=8) and observations (n=6)

Appendix A Continued

Ulvik, 2014, EAR	PST		S	Norway	Student-teachers doing action research in their practicum: why and how? How to guide action research projects.	Reports on professional development of PSTs (n=14)
Ulvik & Riese, 2016, PDiE	PST		S	Norway	Deepening understanding of action research as professional development tool in TE.	Case study; survey (n=30), focus groups (n=3), reports
Ulvik et al 2017, EAR	PST / NQT	Ma	S	Norway	AR connecting practice and use of theory; AR tool for professional development; and AR creates focus in practicum. Positive perceptions! Learning outcomes: attitude and way of thinking**.** Need for sharing results & learning cultures.	Focus groups (n=2x4), evaluations, PST reports
Van den bergh et al., 2017, PS	NQT	Ba/ Ma	P	NL	Inquiry habit of mind and use of literature in school with a research culture. Positive relation between research experience and perceived inquiry habit of mind and literature use.	Questionnaire (n=342)
Van der Linden et al, 2012, EJTE	PST	Ba	P	NL	Student teachers' development of a positive attitude toward research and research knowledge and skills, during an introductory course.	Questionnaire (n=81) pre post
Van der Linden et al 2015, JET	PST	Ba	P	NL	Development of PST research knowledge, beliefs and attitudes of PSTs in second year of primary teacher education.	*Pre post-test concept maps of research knowledge + questionnaire (n=75)
Van Schaik et al., 2018, IJER	T		S	Inter-national	Review study explores barriers and conditions for teachers' academic knowledge utilisation in the literature since 2001. Structural collaboration between schools and universities improves knowledge utilisation.	Review study
Volk, 2010, AR	NQT 1y	Ba	P/ S	U Arab Emirates	NQT who completed their Ba with AR, showed a narrow definition of AR, 2/3 use AR results, ¾ do not use AR in their teaching job, because of lack of time. Also suggestion that it was too formal. Five recommendations	Telephone interviews (n=101)
Vrijnsen-de Corte et al., 2013, TaTE	PST/ TE		S	NL	Questionnaire on teacher research; almost no differences between PDS and non-PDS, and between teachers and PSTs	Questionnaire (n=102)

Appendix A Continued

White et al., 2016, APJTE	PST	Ba	S	Malaysia Australia	Education research methods in transnational program. Learning outcomes: progression in learning and research knowledge	Case study: self-reports and test (n=40)
Willegems et al., 2017, TaTE	PST / T		P/S	Belgium	Teachers and pre-service teachers as partners in collaborative teacher research: A systematic literature review	Review study
Willemse & Boei, 2013, JET	TE			NL	Teacher educators' research practices: an explorative study of teacher educators' perceptions on research	Survey (n=508) and interviews (n=10)
Yuan & Burns, 2017, TTTP	T		P	China	Action research and development of teacher identity	Case study (n=2)
Zeichner, 2003, EAR	T		P/S	USA	Review of studies of school-based teacher research and conditions under which it becomes transformative professional development	Review study
Zwart et al., 2015, PS	T		P/S	Inter-national	Review into the nature and meaning of teacher research	Review study

PST= pre-service teachers, T= teachers, TEs= teacher educators, NQT= Newly qualified teachers, P=Primary school, S= Secondary school, EC= early childhood, Lead = teacher leaders, Curr = curriculum study

Appendix B

Scales and items of the survey on pre-service teacher inquiry

	Factor loading
1.Perceived *value* of pre-service teacher inquiry (n = 7)	
Conducting research is nice.	.433
Conducting research is interesting.	.623
Conducting research is useful.	.500
Conducting research is enriching.	.618
Conducting research is deepening.	.499
Conducting research is instructive.	.517
Conducting research is boring.*	.461
2.Expectation of using inquiry competence in one's *future* profession (n = 11)	
Conducting research is part of the job description of a teacher.	.731
Research fits naturally into the work of a teacher.	.691
I think research is a good way for me to increase my level of professionalism.	.469
I would really like to conduct research in my future job.	.735
I prefer to apply to a school where I get the space to do research.	.715
I will conduct research in my future job to improve practice.	.740
I will look for colleagues to conduct research together.	.823
I do not think I will conduct research in my future job as a teacher.*	.578
Conducting research is too time consuming.*	.624
Pre-service teacher inquiry is a useless compulsory TE component.*	.477
I do not think I will conduct research to resolve a problem in future.*	.721
3.Perceived ability of *inquiry competence* (n = 6)	
I have learned how to design research.	.774
I feel capable of conducting research.	.890
I have acquired knowledge of the topic I researched.	.786
I am able to use knowledge from my research in my work as a teacher.	.578
I have learned enough to independently conduct research in practice.	.764
Research helps me to acquire systematic insight into practical problems.	.414
4.Perceived *ease* of undertaking pre-service teacher inquiry (n = 4)	
I think that conducting research is easy.	.703
I think that conducting research is difficult.*	.826
I think that conducting research is time consuming.*	.490
Conducting research is too difficult to do without supervision.*	.605

*Items that were reverse-scored

Appendix C

Questionnaire perceptions pre-service teacher inquiry (for pre-service teachers)

Vragenlijst voor Pabostudenten over praktijk(gericht) onderzoek in de opleiding

Inleiding

Deze vragenlijst gaat over het doen van onderzoek, zoals je dat in jouw studie aan de Pabo hebt gedaan. De lijst is een onderdeel van een onderzoek naar de betekenis van praktijkgericht onderzoek op de Pabo en de rol van onderzoek bij de groei naar de startbekwaamheid leraar basisonderwijs. Uitkomsten van dit onderzoek zullen bijdragen aan de doorontwikkeling van de onderzoekslijn op de Pabo.

Er zijn geen goede of foute antwoorden, het gaat om jouw mening.

Voor een mogelijke koppeling naar studieresultaten en andere gegevens voor dit onderzoek wordt jouw studentnummer gevraagd. De gegevens worden anoniem verwerkt. Jouw privacy is gegarandeerd.

Algemene vragen

1. **Aan welke hogeschool studeer je?**

   .....

2. **Wat is jouw hoogst genoten vooropleiding (1 antwoord aankruisen)**
   - ❍ MBO
   - ❍ HAVO
   - ❍ VWO/gymnasium
   - ❍ andere HBO-opleiding
   - ❍ WO-opleiding
   - ❍ anders, nl...
   - ❍ .....

3. In welk jaar ben je begonnen aan de opleiding?

|__|__|__|__|

4. Ben je man/vrouw

❍ man

❍ vrouw

5. Wat is jouw leeftijd?

|__|__| jaar

6. Geef aan hoe je de verschillende studieonderdelen hebt ervaren.

Omcirkel per stelling 1 antwoord, als je het onderdeel niet gehad hebt, omcirkel je '0; nvt'.

		nvt	nooit zinvol	soms zinvol	vaak zinvol	meestal zinvol	altijd zinvol
a.	Hoorcolleges (alle vakken)	0	1	2	3	4	5
b.	Werkcolleges (alle vakken)	0	1	2	3	4	5
c.	Thema/moduleopdrachten	0	1	2	3	4	5
d.	Onderzoekscolleges	0	1	2	3	4	5
e.	Zelf onderzoek doen	0	1	2	3	4	5
f.	Praktijk / stage	0	1	2	3	4	5
g.	Ander onderdeel, nl.	0	1	2	3	4	5

De volgende vragen gaan in op het onderzoek

7. Wat is de onderzoeksvraag van jouw laatste onderzoek?

8. Geef van de onderstaande stellingen aan in hoeverre je het ermee eens bent. Wat heb je geleerd van het doen van en over onderzoek?

Omcirkel per stelling 1 antwoord

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	ik heb geleerd hoe ik onderzoek kan opzetten	1	2	3	4	5	6
b.	ik kan onderzoek uitvoeren	1	2	3	4	5	6
c.	ik heb kennis opgedaan over het onderwerp dat ik heb onderzocht	1	2	3	4	5	6
d.	ik kan de kennis uit mijn onderzoek gebruiken in mijn werk als leraar	1	2	3	4	5	6
e.	ik heb voldoende geleerd om zelfstandig onderzoek uit te voeren in mijn praktijk	1	2	3	4	5	6
f.	onderzoek doen is te moeilijk om zonder begeleiding te doen	1	2	3	4	5	6

De grootste leerwinst met betrekking tot het doen van onderzoek voor mij was:

9. Geef van onderstaande uitspraken aan wat het meest op jou van toepassing is. Wat vind je van het doen van onderzoek?

(omcirkel per stelling 1 antwoord)

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	onderzoek helpt om op een systematische wijze inzicht te krijgen in praktijkproblemen	1	2	3	4	5	6
b.	het doen van onderzoek hoort bij het leraarsberoep	1	2	3	4	5	6
c.	onderzoek is goed in te passen in het werk als leraar	1	2	3	4	5	6
d.	ik denk **niet** dat ik zelf onderzoek zal gaan doen als ik een probleem wil oplossen	1	2	3	4	5	6
e.	ik vind onderzoek een goede manier om mezelf te professionaliseren	1	2	3	4	5	6
f.	ik vind het uitvoeren van onderzoek te veel tijd kosten als ik een probleem wil oplossen	1	2	3	4	5	6
g.	onderzoek zou je samen met collega's moeten doen	1	2	3	4	5	6
h.	onderzoek was verplicht onderdeel van de studie maar ik snap niet wat een leraar daarmee moet	1	2	3	4	5	6
i.	ik vind onderzoek een goede manier om mijn onderwijspraktijk te verbeteren	1	2	3	4	5	6
j.	onderzoek doen is een goede manier om HBO-kwaliteiten aan te tonen	1	2	3	4	5	6
k.	onderzoek doen motiveert me	1	2	3	4	5	6
l.	onderzoek doen vergroot mijn onderzoekende houding	1	2	3	4	5	6

10. Het doen van onderzoek vind ik

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	leuk	1	2	3	4	5	6
b.	moeilijk	1	2	3	4	5	6
c.	interessant	1	2	3	4	5	6
d.	zinvol	1	2	3	4	5	6
e.	tijdrovend	1	2	3	4	5	6
f.	te tijdrovend	1	2	3	4	5	6
g.	verrijkend	1	2	3	4	5	6
h.	saai	1	2	3	4	5	6
i.	verdiepend	1	2	3	4	5	6
j.	gemakkelijk	1	2	3	4	5	6
k.	leerzaam	1	2	3	4	5	6

Zijn er nog andere termen die in jou opkomen bij de vraag "Wat vind je van het doen van onderzoek"? Welke?
Sterke punten van (de leerlijn) praktijkonderzoek in de opleiding zijn:
Zwakke punten van (de leerlijn) praktijkonderzoek in de opleiding zijn:

Geef van onderstaande uitspraken aan wat het meest op jou van toepassing is.

11. Wat denk je in je (toekomstige) baan als juf / meester te doen met onderzoek?
(omcirkel per stelling één antwoord)

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	ik zou graag onderzoek willen doen in mijn werk als juf / meester	1	2	3	4	5	6
b.	ik solliciteer bij voorkeur bij een school waar ik de ruimte krijg om onderzoek te gaan doen	1	2	3	4	5	6
c.	ik ga in mijn (toekomstige) baan als juf / meester zelf onderzoek doen om mijn praktijk te verbeteren	1	2	3	4	5	6
d.	ik ga in mijn (toekomstige) baan op zoek naar collega's om samen onderzoek mee te doen	1	2	3	4	5	6
e.	ik zie mij in mijn (toekomstige) baan in het onderwijs **geen** onderzoek doen	1	2	3	4	5	6

C

Appendix D

Questionnaire perceptions pre-service teacher inquiry (for teacher educators)

Vragenlijst voor Pabodocenten over praktijkgericht onderzoek

Inleiding

Deze vragenlijst gaat over het doen van praktijkgericht onderzoek. Zowel over het zelf doen en gebruiken van onderzoek, als over het onderzoek dat studenten tijdens hun studie aan de Pabo doen. De lijst is een onderdeel van een promotie-onderzoek naar de betekenis van praktijkgericht onderzoek op de Pabo en de rol van onderzoek bij de professionalisering van studenten tot startbekwaam leraar basisonderwijs. Uitkomsten van dit onderzoek zullen bijdragen aan de doorontwikkeling van de onderzoekslijn op de Pabo.

Er zijn geen goede of foute antwoorden, het gaat om uw mening. De gegevens worden anoniem verwerkt. Uw privacy is gegarandeerd.

Algemene vragen

1. **Aan welke hogeschool bent u verbonden?**

   .....

2. **Wat is uw hoogst afgeronde vooropleiding (1 antwoord aankruisen)**
   - ❍ HBO Bachelor
   - ❍ HBO Master
   - ❍ WO Master
   - ❍ PhD
   - ❍ Anders namelijk .....

Welke studie? .....

3. In welk kader heeft u zelf het laatst onderzoek verricht?

- ❍ PhD
- ❍ WO Master
- ❍ HBO Master
- ❍ Kenniskring
- ❍ Cursus onderzoeksvaardigheden
- ❍ Ik heb nooit echt onderzoek uitgevoerd
- ❍ Anders namelijk .....

4. Wanneer was dit?

|__|__|__|__|

5. Over welk onderwerp ging/gaat dit onderzoek?

6. Geef aan hoe zinvol verschillende studieonderdelen uit het curriculum volgens u zijn.

(omcirkel per stelling 1 antwoord)

		weetniet	nooit zinvol	soms zinvol	vaak zinvol	meestal zinvol	altijd zinvol
h.	Hoorcolleges (alle vakken)	0	1	2	3	4	5
i.	Werkcolleges (alle vakken)	0	1	2	3	4	5
j.	Thema/moduleopdrachten	0	1	2	3	4	5
k.	Onderzoekscolleges	0	1	2	3	4	5
l.	Zelf onderzoek doen	0	1	2	3	4	5
m.	Praktijk / stage	0	1	2	3	4	5
n.	Ander onderdeel, nl.	0	1	2	3	4	5

7. Op welke manier(en) bent u betrokken bij onderzoek van studenten?
(meerdere antwoorden mogelijk)

- ❍ Ik ben **niet** betrokken bij onderzoek van studenten
- ❍ Ik geef onderzoekscolleges
- ❍ Ik begeleid onderzoek in de eerste leerjaren
- ❍ Ik begeleid studenten bij afstudeeronderzoek
- ❍ Ik begeleid langstudeerders bij afstudeeronderzoek
- ❍ Anders namelijk .....

De volgende vragen gaan in op uw eigen idee over onderzoek.

8. Geef van onderstaande uitspraken aan wat het meest op u van toepassing is. Wat vindt u van het doen van onderzoek?
(omcirkel per stelling 1 antwoord)

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	het doen van onderzoek hoort bij het beroep van lerarenopleider	1	2	3	4	5	6
b.	onderzoek helpt om op een systematische wijze inzicht te krijgen in praktijkproblemen	1	2	3	4	5	6
c.	onderzoek is goed in te passen in het werk als opleider	1	2	3	4	5	6
d.	ik vind onderzoek een goede manier om mezelf te professionaliseren	1	2	3	4	5	6
e.	ik vind het uitvoeren van onderzoek te veel tijd kosten als ik een probleem wil oplossen	1	2	3	4	5	6
f.	onderzoek zou je samen met collega's moeten doen	1	2	3	4	5	6
g.	het doen van onderzoek hoort bij het beroep van leraren bao	1	2	3	4	5	6
h.	ik vind onderzoek een goede manier om mijn onderwijs-praktijk te verbeteren	1	2	3	4	5	6
i.	ik voel mezelf capabel om onderzoek te doen	1	2	3	4	5	6

j.	onderzoek doen motiveert me	1	2	3	4	5	6
k.	onderzoek doen vergroot mijn onderzoekende houding	1	2	3	4	5	6
l.	ik lees onderzoek dat op mijn vakgebied gepubliceerd wordt	1	2	3	4	5	6
m.	ik gebruik onderzoek van anderen om mijn eigen praktijk te verbeteren	1	2	3	4	5	6

9. Het zelf doen van onderzoek vind ik

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
l.	leuk	1	2	3	4	5	6
m.	moeilijk	1	2	3	4	5	6
n.	interessant	1	2	3	4	5	6
o.	zinvol	1	2	3	4	5	6
p.	tijdrovend	1	2	3	4	5	6
q.	te tijdrovend	1	2	3	4	5	6
r.	verrijkend	1	2	3	4	5	6
s.	saai	1	2	3	4	5	6
t.	verdiepend	1	2	3	4	5	6
u.	gemakkelijk	1	2	3	4	5	6
v.	leerzaam	1	2	3	4	5	6

Zijn er nog andere termen die in u opkomen bij de vraag "Wat vindt u van het zelf doen van onderzoek"? Welke?

De volgende vragen gaan over het doen van praktijkgericht onderzoek door studenten.

10. Geef van de onderstaande stellingen aan in hoeverre u het ermee eens bent. Wat leren studenten tijdens de opleiding over onderzoek?

Omcirkel per stelling 1 antwoord

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	ze leren hoe ze onderzoek kunnen opzetten	1	2	3	4	5	6
b.	ze kunnen onderzoek uitvoeren	1	2	3	4	5	6
c.	ze hebben theoretische kennis opgedaan over het onderwerp dat ze hebben onderzocht	1	2	3	4	5	6
d.	ze hebben praktische kennis opgedaan over het onderwerp dat ze hebben onderzocht	1	2	3	4	5	6
e.	ze kunnen de theoretische kennis uit hun onderzoek gebruiken in hun werk als leraar	1	2	3	4	5	6
f.	ze kunnen de praktische kennis uit hun onderzoek gebruiken in hun werk als leraar	1	2	3	4	5	6
g.	ze hebben voldoende geleerd om zelfstandig onderzoek uit te voeren in de praktijk	1	2	3	4	5	6

De grootste leerwinst met betrekking tot het doen van onderzoek voor studenten is:
De waarde van praktijkgericht onderzoek als onderdeel voor studenten op de Pabo is:

11. Wat is uw idee over het doen van praktijkgericht onderzoek door studenten in de opleiding?

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	onderzoek helpt hen om op een systematische wijze inzicht te krijgen in praktijkproblemen	1	2	3	4	5	6
b.	ik denk **niet** dat studenten zelf onderzoek zullen gaan doen als ze een probleem wil oplossen	1	2	3	4	5	6
c.	ik vind onderzoek een goede manier om studenten te professionaliseren	1	2	3	4	5	6
d.	ik vind dat het uitvoeren van onderzoek te veel tijd kost voor een student	1	2	3	4	5	6
e.	ik vind onderzoek een goede manier om de onderwijspraktijk van studenten te verbeteren	1	2	3	4	5	6
f.	onderzoek doen vergroot de onderzoekende houding van studenten	1	2	3	4	5	6
g.	onderzoek doen is voor studenten te moeilijk om zonder begeleiding te doen	1	2	3	4	5	6
h.	onderzoek doen is een goede manier om HBO-kwaliteiten aan te tonen	1	2	3	4	5	6
i.	ze gaan in hun toekomstige baan als juf / meester zelf onderzoek doen om hun praktijk te verbeteren	1	2	3	4	5	6
j.	ze zullen in hun (toekomstige) baan samen met collega's onderzoek doen	1	2	3	4	5	6
k.	onderzoek doen is een verplicht onderdeel van de studie maar ik snap niet wat een leraar bao daarmee moet	1	2	3	4	5	6

12. Wat is uw idee over het aanleren van praktijkgericht onderzoek in de opleiding?

		100% oneens	grotendeels oneens	een beetje oneens	een beetje eens	grotendeels eens	100% eens
a.	onderzoek moet als vak worden aangeboden	1	2	3	4	5	6
b.	onderzoek moet volledig geïntegreerd worden	1	2	3	4	5	6
c.	kennis over onderzoeks-vaardigheden moet getoetst worden	1	2	3	4	5	6
d.	onderzoek moet een plaats krijgen in alle vakken	1	2	3	4	5	6
e.	onderzoek moet gekoppeld worden aan stage	1	2	3	4	5	6
f.	het is goed om vanaf P1 met onderzoek te starten	1	2	3	4	5	6
g.	onderzoek krijgt momenteel teveel aandacht in de opleiding	1	2	3	4	5	6
h.	het stimuleren van de onderzoekende houding moet centraal staan	1	2	3	4	5	6
i.	in het curriculum is voldoende aandacht voor de onderzoekende houding	1	2	3	4	5	6

Sterke punten van de huidige leerlijn onderzoek zijn:
Zwakke punten van de huidige leerlijn onderzoek zijn:
Een goed voorbeeld van zinvol studentonderzoek is:

PUPIL
PRE-SERVICE TEACHER
TEACHER EDUCATOR

Dankwoord
&
About the author

Dankwoord

Een aantal jaar geleden deelde Harry, mijn kamergenoot op Pabo De Eekhorst, een metafoor met mij waar ik ook tijdens het promotietraject af en toe aan heb moeten denken: Je kunt het leven zien als een huis met vier kamers te weten Inspiratie, Werk, Ontspanning en Relatie(s). Om gelukkig en gezond te blijven moet je ervoor zorgen dat je regelmatig in iedere kamer komt (en nergens te lang blijft hangen)! In al die kamers ben ik mensen tegengekomen, die direct of indirect een bijdrage geleverd hebben aan dit proefschrift en die ik wil bedanken.

Inspiratie

De eerste continue bron van inspiratie is Ellen. Als dagelijks begeleider kon ik altijd op jou rekenen. Je gaf mij vertrouwen in de dingen die ik deed, wist mij te stimuleren en met mij mee te denken. Je bent constructief kritisch, ervaren, pragmatisch en relativerend. Daarnaast vond ik het fijn dat we ook zaken uit de andere kamers met elkaar konden delen; over hardlopen tot over familiezaken. Ook Klaas is een gave inspiratiebron voor mij geweest. Jouw humor, hart voor onderwijs en mensenkennis spreken mij bijzonder aan. Zonder jou was het mij niet gelukt om een half jaar naar Melbourne te gaan om daar mijn ervaring als lerarenopleider en onderzoeker te verrijken. Vanaf het eerste begin tot nu toe gaf je mij het vertrouwen dat ik het ging redden en voldoende kwaliteit in huis had; een waardevolle conditie om te kunnen leren. Met plezier denk ik terug aan ongeplande etentjes met jou bij of na congresbezoeken, zoals die keer in Utrecht toen alle treinen richting het noorden waren uitgevallen. My third (informal) supervisor is Mandi. You have certainly inspired me by your expertise about qualitative research as well as the way you act as a teacher educator. I still feel honoured that you have invited me to cooperate in your module about pre-service teacher research, lend me your students and wanted to be a co-author of my first article (chapter 4). I would also like to thank Melissa Barnes (Monash University) and Michael Crowhurst (RMIT) that I could participate as a teacher educator in their classes. The stay with my family in Melbourne was enriching for all; we experienced a different system of education from Primary education up to university and highly enjoyed our special nature trips. Ook een aantal andere mooie plekjes zorgden ervoor dat ik de rust kon vinden om lekker te schrijven. Ik had nooit gedacht dat ik het fijn zou vinden om een week lang in mijn eentje in een huisje te zitten! Daarom wil ik Arjen en Bart bijzonder bedanken voor het beschikbaar stellen van hun prachtige huisjes in dito omgeving.

Ik ontmoette in deze kamer nog vele anderen, waarvan ik er een paar wil noemen. Gabriël Anthonio gaf mij het eerste zetje om dit promotietraject aan te durven gaan. Daan Andriessen, bij wie ik in de buitenkring van het lectoraat mocht meedraaien, inspireerde mij door de manier waarop hij naar onderzoek in het hbo kijkt en de originele wijze waarop verworven inzichten gedeeld kunnen worden. Tijdens het traject heb ik veel inspiratie opgedaan door naar congressen te gaan om mijn onderzoek te presenteren en te bediscussiëren, zowel in Nederland (Velon, ORD, HEC) als in het buitenland (ATEA, ISATT, EARLI). Naast het inhoudelijke programma, heb ik hierbij veel gehad aan de gezelligheid en discussies over onderzoek bijvoorbeeld met Ridwan, Jennifer en Hannah. Ook de groep buitenpromovendi op de RUG zorgde voor inspiratie en uitlaatklep, zowel tijdens de bijeenkomsten en op de tijdelijke werkkamer, als in de trein terug naar huis met Bruno en Michelle.

Werk

Deze kamer, die natuurlijk gevoed wordt door de eerste kamer, bestond uit drie delen. Allereerst is daar de basis (NHL)Stenden, om preciezer te zijn Pabo De Eekhorst in Assen. Hoewel mijn fysieke aanwezigheid de afgelopen jaren steeds minder is geworden, wil ik alle collega's bedanken voor hun medeleven bij mijn onderzoek. Inhoudelijk heb ik veel aan de onderzoekende houding van Francien gehad; wat is het toch heerlijk om elkaar aan het denken te zetten! Ik heb ook erg veel geleerd van Arda; hoewel we tegelijkertijd hetzelfde traject doorliepen en elkaar daarin ondersteunden, verschillen we als persoon en hebben daardoor ook geheel verschillende ervaringen opgedaan. Ik heb veel gehad aan jouw kennis over ATLAS-ti en jouw manier van werken. Het was een plezier om naar jouw huisje bij Westerbork te fietsen. Ik kijk uit naar jouw verdediging! Nog steeds voel ik het als een cadeautje van (NHL)Stenden dat ik dit traject mocht doorlopen en heb daarbij extra ondersteuning ervaren van Ingrid, Petra, Jantine en Klaas-Wybo. Ik ben blij dat ik in de kenniskring van Herman terecht ben gekomen, die mij altijd het vertrouwen en de ruimte gaf. Bedankt daarvoor. Hierdoor worden de uitkomsten van mijn onderzoek ook daadwerkelijk toegepast in de hogeschool. Ik kijk uit naar een vervolg! Het doet mij deugt hierbij ook Siebrich weer tegen te komen, die ik als collega op de RUG heb leren kennen en nu op beide werkplekken tref. Dit geldt ook voor Inge, die naast haar eigen onderzoek en roerig bestaan ook nog kans zag om een deel van mijn data tegen te coderen. Andere onderzoekers van de RUG hielpen mij ook keer op keer een stapje verder. Zelfs vanuit Zuid-Afrika was Ine altijd bereid om mee te denken; teksten van feedback te voorzien en reviewers van repliek te bedienen. Onder bezielende leiding/organisatie van Ester

hebben we een goede poging gedaan om een artikel in 7 dagen te schrijven. Dank ook aan Elske en Andy voor hun humorvolle ondersteuning bij het verwerken van data in SPSS. Die data waren er niet geweest zonder de bijdrage van verschillende collega's. De ICALT-observaties in het eerste jaar had ik nooit in mijn eentje kunnen uitvoeren. Daarom wil ik Winy, Freek, Henny en Anne hartelijk danken; hun expertise, goede samenwerking en communicatie kwamen ten goede aan de betrouwbaarheid van de data. Ook collega's en studenten van andere pabo's waren geïnteresseerd en hebben door hun medewerking een waardevolle bijdrage geleverd, te noemen: Annelies Kraaiveld (Driestar), Harry Stokhof (HAN), Jan Kaldeway (CHE), Jeanette Geldens (De Kempel), Marjolein Rietveld (Windesheim-Flevoland), Michelle Gemmink (KPZ), en Theresa Kleefmans (Hanze). David, thank you for your feedback on my written English.

Het derde deel van deze kamer vormt het onderwijs bij de universitaire lerarenopleiding, wat gelukkig een vervolg zal krijgen. In deze kamer kwam ik tal van bevlogen collega's tegen die zowel onderwijs als onderzoek een warm hart toedragen en die ik niet allemaal ga noemen. Ik heb veel gehad aan de gesprekken met en beschouwingen van Eva-Anne tijdens een kop koffie alsook tijdens de leeskringen in de kroeg; dat moesten we maar weer eens oppakken!

Ontspanning

En zo zijn we haast ongemerkt in de ruimte Ontspanning gekomen. Ook met collega's is die ontspanning voor mij erg van belang. Daarom wil ik Tim bedanken als borrelcie, Marjon voor onze slak-Garry-rooftocht en vuilraapactie in het Noorderplantsoen, alle 4 mijl-renners en participanten aan het hardloopcluppie, en Moyee voor alle goede koffie. Buiten werktijd vond ik ontspanning in muziek; ons wijkstrijkkwartet met Catelijn, Iris en Jurriaan, waarmee lief en leed gedeeld kan worden, alsook symfonie-orkest de Harmonie. De spelers van Gronical Dizziness wil ik bedanken omdat ik ook zonder veel trainingen toch mee mocht frisbeeën.

Relatie(s)

De relatie met mensen om je heen is van essentieel belang om een leertraject als dit te kunnen volbrengen. Ik heb al heel wat relaties benoemd, maar er zijn voor mij nog meer mensen belangrijk: Mijn vrienden van Ipipoerax, die naast ontspanning en tal van activiteiten ook altijd interesse toonden en mijn denkbeelden verrijkten. Hetzelfde geldt voor Marijke en Joost; het is steeds weer leuk om samen op te trekken. Ook de familie leefde mee: Allereerst mijn moeder. Zeker de eerste jaren toonde zij

interesse, maar helaas zal de trots die zij voelt omdat ik één van haar zes kinderen ben weer snel vergeten zijn. Op mijn zus Friederike en broers Evert-Jan, Rogier, Fokke en Quinten kan ik altijd bouwen. Fijn dat de laatste twee ook in het onderwijs terecht zijn gekomen, dat levert inspiratie en goede discussies. Mijn getalenteerde nichtje Esther, wil ik bedanken voor de illustratie van de voorkaft. Ook mijn schoonfamilie, waarvan een aantal het traject zelf doorlopen hebben, steunden mij al die jaren door dik en dun. Lieve Kees en Riek, Jan, Ankie, Bram en Elske, ik hoop nog lang met jullie -en de aanhang van deze bijzondere Bossenbende- familieweekenden met sport, spel, gesprek, zang en dans mee te maken.

Tot slot zijn er mensen die ik in alle vier de kamers tegenkom: mijn paranimfen Eeltje; kamergenoot op De Eekhorst, inspiratiebron voor pedagogisch handelen en curriculumontwerp en Deniz; kamergenoot op de RUG, inspirerende en zeer integere vakdidacticus biologie. Mijn kinderen Elise, Emiel en Juliette, die mij uit mijn 'werkkamer' konden lokken met een knuffel, een spel, een verhaal of een hulpvraag. En natuurlijk Daan! Jammer dat hij uiteindelijk toch dit dankwoord niet geschreven heeft (wat hij beloofd had), maar verder zou ik iedere promovendus zo'n relatie gunnen. Hij is mijn held, echt mijn makker. Onze gesprekken kregen een extra dimensie en ik heb me nooit zorgen hoeven maken over hoe het thuis liep; de beste plek om te leven, te leren en lief te hebben.

About the author

Lidewij van Katwijk (1968) was born in Amsterdam, where she followed primary and secondary education. After this, she moved to Wageningen to study biology with the specialisation of ecology and environmental education. In 2013/2014 she attended teacher education for secondary school at the University of Utrecht (IVLOS) where she graduated cum laude. After teaching a few years, Lidewij moved to Texel to teach environmental learning programmes for EcoMare, Wadden Sea centre. She continued to work as a nature guide for SNP and to teach fieldwork programmes for stichting Veldwerk Nederland. Since 2001 she works at NHL Stenden University of Applied Sciences as a teacher educator primary education, teaching nature, science and technology. She became coordinator of the final year and participated in curriculum design groups. She is an assessor in the registration trajectory for teacher educators of the VELON, the Dutch association for teacher educators. In 2014 she started her PhD, under supervision of Klaas van Veen and Ellen Jansen at the Graduate School of Behavioural and Social Sciences of the University of Groningen, which resulted in the current thesis. Part of the data collection took place in Melbourne, Australia, where Lidewij collaborated with teacher educators at RMIT and Monash University. She presented her work at national and international conferences (Australia, Spain, Norway, Germany) and published several chapters of this thesis in international journals. In 2016 she also started working as a subject pedagogical expert (vakdidacticus) biology at the teacher education department of the university of Groningen.

Lidewij continues her work as a teacher educator, researcher and educational designer at NHL Stenden and at the University of Groningen aiming to inspire pre-service teachers and colleagues to develop an inquiry stance and improve education through the interaction of research and practice.

A visiting PhD student scholarship to Monash University and RMIT, Australia in the period June-December 2016 was facilitated by NHL Stenden University of Applied Sciences and the University of Groningen.

Empowering pre-service teachers through inquiry

For about ten years, pre-service teacher inquiry has been a compulsory component of the primary teacher education programme. However, why it had become compulsory and whether it led to better teachers was not clear. A formal reason for research – or actually inquiry - forming part of the curriculum is linked to the Dublin-descriptors, which have been established at European level. Previous research makes the assumption that pre-service teacher inquiry contributes to lifelong learning. The aim is not to educate researchers, but curious and critical teachers; professionals who can convert their inquiry habit of mind into inquiry based practice. In other words, development of an inquiry stance.

This thesis examines how an inquiry stance is developed in the intended, implemented and attained curriculum of primary teacher education. In contrast to the intuitive expectation that pre-service teacher inquiry is experienced as a burden, findings show that pre-service teachers and teacher educators in the Netherlands and Australia consider it to be a valuable and useful component of the programme. They feel empowered by pre-service teacher inquiry. Results also show a positive correlation between the quality of inquiry and the quality of teaching. The still underdeveloped research culture in primary schools, the formal nature of the pre-service teacher research and the realistic view of the first years of teaching are the main reasons why students do not think they will conduct practitioner research in their future profession. The development of an inquiry habit of mind is the most important aspect of the inquiry stance, but pre-service teachers do not recognize this in the educational activities and assessment.