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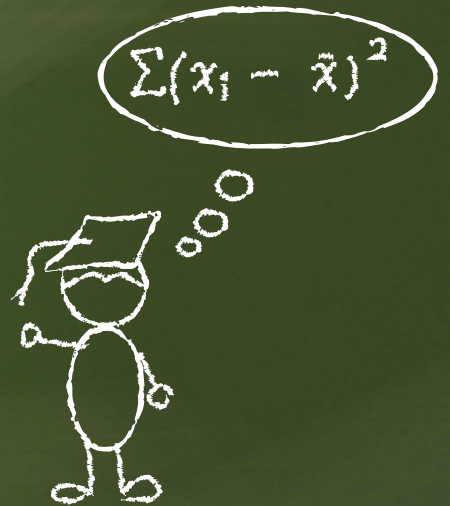
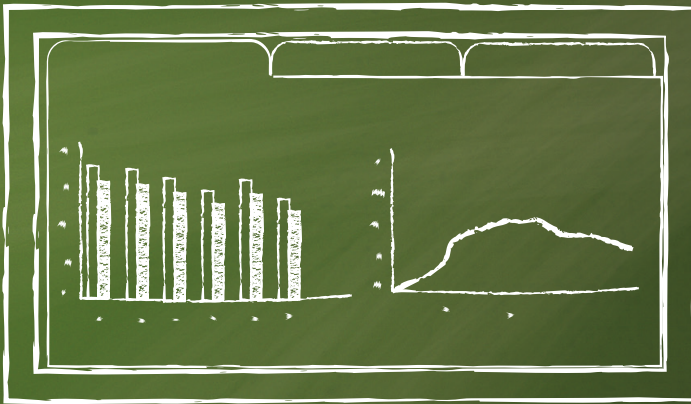
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Jan Baan



# **The contribution of academic teachers to inquiry-based working in primary schools**

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# **The contribution of academic teachers to inquiry-based working in primary schools**

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

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# CHAPTER

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# 1

## **General introduction and outline of the thesis**

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In recent decades, several measures have been taken to increase the quality of teachers in the Netherlands. One of these measures was the foundation of academic teacher education programmes for primary education in 2008. These programmes are offered in addition to the regular teacher education programmes, which are more professionally oriented. An important reason for the development of these newly developed academic programmes was an increased awareness of the important role of teachers in the improvement of educational quality and the growing role played by inquiry in this improvement (e.g. Hattie, 2008; Barber & Mourshed, 2007; Cochran-Smith & Lytle, 2009). Teachers nowadays are expected to not only be good at teaching but also to be involved in inquiry-based working, meaning that they should be able to use and conduct research to reflect on and improve their own teaching and to contribute to developments in their school organisations (Davis, Clayton, & Broome, 2018; Sachs, 2016; Van der Wal-Maris, Beijaard, Schellings, & Geldens, 2018).

These expectations have consequences for teacher education programmes. Therefore, several countries have developed more academically oriented programmes with a strong focus on research (Aspfors & Eklund, 2017; Darling-Hammond, 2017; Maaranen, 2010; Struyve, Frijns, Vanblaere, Delrue, & De Fraine, 2019). In these academic programmes, student teachers learn to use available evidence, data on learning outcomes or observational data when making decisions (Maaranen & Krokfors, 2008; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017). It is therefore expected that graduates of these programmes will be able to work in an inquiry-based way, once they are employed as a teacher (Maaranen & Krokfors, 2008; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017; Van der Wal-Maris et al., 2018). Since 2012, graduates of academic teacher education programmes have found employment in schools (Lubberman, Rossing, Leemans, & Paulussen-Hoogeboom, 2017). These teachers are expected to use their research expertise to contribute to inquiry-based working in their schools (Broeks, Bakker, Hertogh van Meeuwen-Kok & Gondwe, 2018). However, it is unknown to what extent and how graduates of these programmes actually engage in inquiry-based working in their first years as teachers. The aim of this dissertation is to provide insights into the contributions of graduates of these academic programmes to inquiry-based working in their schools and how these contributions can be enhanced. This dissertation is based on the following central question:

*To what extent and how do academically educated teachers contribute to inquiry-based working in primary schools?*

## **Inquiry-based working**

Inquiry-based working is frequently mentioned as a promising approach that contributes to improving the quality of education (Cochran-Smith & Lytle, 2009; Cordingley, 2015; Munthe & Rogne, 2015; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2017; Vrijnsen-de Corte, Brok, Kamp, & Bergen, 2013b; Zwart, Smit, & Admiraal, 2015). In this dissertation, the term inquiry-based working refers to the involvement of teachers in activities ranging from reflective teaching to using research results and conducting more or less formalized research. The aim of inquiry-based working is to improve the quality of teaching in the classroom or in the school (Butler & Schnellert, 2012; Cochran-Smith & Lytle, 2009; Munthe & Rogne, 2015). Inquiry can be distinguished from research, which has a stronger emphasis on the use of appropriate research methods and is often intended to produce knowledge for a wider audience. Inquiry focuses on the context of a school and is not necessarily intended to produce results for a wider public (Munthe & Rogne, 2015). Inquiry-based working may, however, involve forms of teacher research, such as action research, self-study or lesson study (Chokshi & Fernandez, 2005; Groothuisen, Bronkhorst, Prins, & Kuiper, 2019; LaBoskey & Richert, 2015; Wiseman, 2010; Zwart, Smit, & Admiraal, 2015).

Several contributions of inquiry-based working to the quality of education have been described. Involvement in inquiry-based working encourages teachers to keep improving and innovating their practices (Sachs, 2016; Vrijnsen-de Corte et al., 2013b). It can stimulate teachers' self-reflection and help them define their needs in professional development (Davis et al., 2018; Mitchell, Reilly, & Logue, 2009). And lastly, collective inquiry in school organisations can lead to bottom-up quality improvements in which teachers take the lead (Cheng & Szeto, 2016; Cochran-Smith & Lytle, 2009; Hargreaves & Fullan, 2013; Godfrey & Brown, 2018; Willegems, Consuegra, Struyven, & Engels, 2018).

## **Academic teacher education**

Academic teacher education programmes are research-intensive in the sense that research occupies a central place in the curriculum (Afdal & Spernes, 2018). They focus on the education of student teachers as teacher-researchers, who learn not only how to teach but also how to use and conduct research in their schools (Davis et al., 2018; Snoek et al., 2017; Van der Wal-Maris et al., 2018). In each year of these teacher education programmes, attention is paid to conducting and using academic research related to teaching practice. Due to this approach, student teachers learn to collect and interpret relevant data, for example through observing students, analysing test results or conducting questionnaires or interviews, with the aim to improve their teaching.

There are differences in the place research occupies in the curriculum of teacher education in different countries, and thus in to what extent these programmes can be seen as ‘academic’ (Darling-Hammond, 2017). For example in Finland, already since 1970, there is a strong focus on research methodology in the curriculum of the teacher education programme (Hansén, Forsman, Aspfors, & Bendtsen 2012; Maaranen, 2010; Struyve et al., 2019). Finland has combined bachelor’s and master’s teacher education programmes into a five-year course of study (300 ECTS). Student teachers complete their studies by writing a master’s thesis (Maaranen, 2010; Struyve et al., 2019).

Other countries, such as Norway, Singapore, Canada, Ireland and Portugal have also developed more academically oriented programmes in the last decades (Aspfors & Eklund, 2017; Darling-Hammond, 2017; Struyve et al., 2019). In Norway, for example, teacher education was reformed in 2010 and, as of 2017, all teachers are required to obtain a master’s degree. The curriculum places an emphasis on teacher research; students are introduced to research methods and earn research experience by engaging in small-scale research projects. Besides the stronger focus on teacher research, the duration of field practice has also been extended to 200 days in an attempt to connect theory and practice in the programme (Afdal & Spernes, 2018; Aspfors & Eklund, 2017; Ulvik & Riese, 2016; Struyve et al., 2019). In countries such as Canada and Singapore, there is a similar focus on research in teacher education, and there is also a strong link between theory and practice (Darling-Hammond, 2017; Rasmussen & Bayer, 2014). In these countries, the courses offered in teacher education emphasize the link between research-based knowledge and student teachers’ teaching experiences.

However, although academically oriented teacher education programmes have been organised for quite some time now, little is known about how graduates of academic teacher education programmes function in schools and whether and how these teachers actually apply and further develop their research knowledge and competences in practice.

### **Academic programmes in the Netherlands**

In the Netherlands, in addition to the regular, more professionally oriented programmes, academic teacher education programmes for primary schools are now offered by six universities. The regular teacher education programmes are bachelor programmes offered by institutes for higher professional education. Both professional and academic programmes provide initial teacher education over the course of a four-year curriculum. In both types of programmes, there is a strong focus on practical elements; students spend at least 180 days gaining field experience in primary schools. Both programmes integrate teacher research into their curricula (Snoek et al., 2017; van der Linden, Bakx, Ros, Beijaard, & van den Bergh, 2015). For example, in both programmes, student

teachers work on a bachelor's thesis in their final years, based on empirical research. In the academic programmes, however, more of an emphasis is placed on academic research. More attention is paid to quantitative research methods and critical reflection on (international) research literature. The academic programmes are not meant to replace the existing professionally oriented programmes, but they are additional programmes. They attempt to attract student teachers with pre-academic backgrounds in secondary education who only scarcely participate in the existing professionally oriented programmes (Doolaard, Dijkema, Prins, Claessens, & Ebbes, 2018). The research expertise of academically educated teachers is expected to contribute to the quality of education in schools (Doolaard et al., 2018; Snoek et al., 2017).

In this dissertation, the terms regular, professional and professionally oriented programmes are used interchangeably. Graduates of these programmes are referred to as regular teachers or professionally educated teachers, whereas graduates of the academic programmes are referred to as academic teachers or academically educated teachers.

### **The added value of academic programmes**

The functioning of graduates of academic or research-intensive programmes is an emerging research domain internationally. The added value of academic programmes has been described on three different levels: at the level of students' achievements, at the level of teachers' competences and at the level of the school organisation. A literature review by Struyve et al. (2018) found that most studies report on what academic graduates (mostly with a master's degree) add in terms of student achievement. Some studies have reported outcomes on the teacher level, such as competences or attitudes of teachers, and a few studies have focussed on what academic graduates add at the level of the school organisation.

Investigations into the added value of academic programmes at the level of student achievement have mostly taken the form of quantitative studies, and were mostly conducted in the United States. Struyve's review (2018) showed that few studies found a positive relationship between graduates having followed academic programmes and the learning outcomes of students. Some studies found positive results for reading achievements (Croninger, Rice, Rathbun, & Nishio, 2007; Son, Kwon, Jeon, & Hong, 2013) and for mathematics (Darling-Hammond, 2000; Luschei & Carnoy, 2010). However, in most studies, no differences were found between the achievements of the students of graduates of academic programmes and those of graduates of professionally oriented programmes. In the Netherlands, Doolaard et al., (2018) similarly found no differences between the learning outcomes of students from both types of teachers.

Regarding the added value of academic programmes on the level of teachers' competences, several studies have found differences between academically and professionally educated teachers. The review conducted by Struyve (2018) showed, for example, that teachers educated in academic programmes scored significantly higher in teaching competences and paid more attention to interactions with their students (Cadima, Peixoto, & Leal, 2014). Furthermore, they developed more rapidly in terms of their pedagogical and teaching competences than graduates of the regular programmes (Doolaard et al., 2018).

A few studies have focused on the value of academic programmes at the level of the school organisation (Struyve et al., 2019). It was shown that student teachers in academic programmes were motivated to contribute to educational research (Davis et al., 2018; Dunn, Harrison, & Coombe, 2008; Schulz & Mandzuk, 2005; van der Wal- Maris, Geldens, & Beijaard, 2012). However, little is known about the actual involvement of graduates in inquiry-based working. Studies focussing on this involvement are mostly small-scale, investigating one particular academic teacher education programme. Furthermore, these outcomes of these studies are not unequivocal (Davis et al., 2018; Goodnough, 2011; Maaranen, 2009; Volk, 2010). On the one hand, studies in the Netherlands, Canada, Finland and the United States indicated that graduates of academic programmes were critical in their reflection and focussed on using and sharing knowledge with colleagues (Davis et al., 2018; Goodnough, 2011; Maaranen, 2009; Doolaard et al., 2018). On the other hand, studies conducted by Volk (2010) in the United Arab Emirates and by Goodnough (2011) in Canada reported that only a small number of teachers were actually involved in conducting research after graduating from a research-intensive programme. This raises the question of which factors contribute to the involvement of graduates of academic programmes in inquiry-based working. Furthermore, it seems worthwhile to get more insight in the development in inquiry-based working of academic teachers over a longer period of time.

### **Factors influencing inquiry-based working**

Several studies have identified factors that stimulate or hinder the involvement of teachers in inquiry-based working; factors at the level of the school organisation as well as personal factors (Butler, Schnellert, & MacNeil, 2015; Deluca, Bolden, & Chan, 2017; Schenke, van Driel, Geijssels, & Volman, 2017; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2016; Vrijnsen-de Corte, Brok, Kamp, & Bergen, 2013a). With regard to factors related to the school organisation, a literature review conducted by Zwart, Smit and Admiraal (2015) found that time, a supportive work environment, coaching on inquiry-based working and access to resources have an influence on teachers' involvement in inquiry-based working. Other studies have demonstrated the importance of school leaders in this respect (Schenke, 2015; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2017). Furthermore,

Uiterwijk-Luijk et al. (2016) and Deluca et al. (2017) showed that collective efficacy, which refers to the expectations of teachers regarding the ability of their team to work in an inquiry-based manner, has an influence on teachers' involvement in inquiry-based working (Uiterwijk-Luijk et al., 2016). Besides these school-level organisational factors, several individual factors such as teachers' attitude towards inquiry and self-efficacy seem to play a role (Uiterwijk-Luijk et al., 2016; Vrijnsen-de Corte et al., 2013a). However, these studies do not specifically focus on graduates of academic teacher education programmes. Furthermore, it is unknown how graduates from academic programmes further develop in inquiry-based working once they are employed as a teacher and which factors are related to this development. Therefore, this study aims to provide insight into these factors.

### **Problem statement and research questions**

It is expected that academic teachers will use their competences to contribute to inquiry-based working in their schools, which in turn can lead to the improvement of educational quality. However, there is a lack of knowledge concerning the actual involvement in inquiry-based working of these teachers and in factors that influence academic teachers' further development in inquiry-based working.

The following research questions are investigated to answer the central question: *To what extent and how do academically educated teachers contribute to inquiry-based working in primary schools?*

1. To what extent and how does the inquiring attitude of student teachers who followed an academic or professional curriculum in teacher education differ?
2. To what extent are academic and regular teachers involved in inquiry-based working, and what are the differences between these groups of teachers?
3. What are the factors influencing the involvement of academic and regular teachers in inquiry-based working?
4. How and under which conditions does the inquiry-based working of academically educated teachers develop in their first years of teaching?

### **Studies**

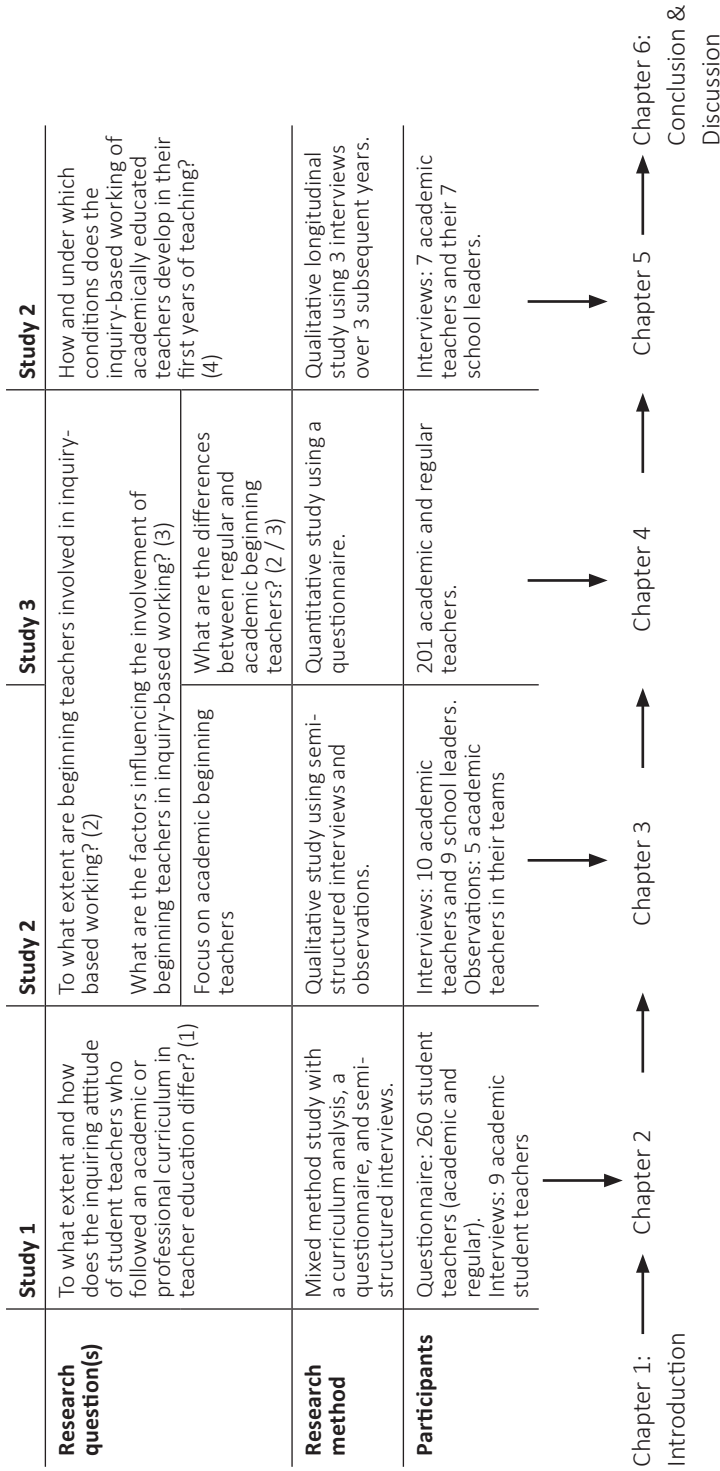
To answer these questions, three studies were conducted. Figure 1 shows the research questions of these studies, their methods and participants. The figure also indicates in which chapters the studies are discussed.



The first study (Chapter 2) focusses on the *inquiring attitude* of student teachers from either a regular or an academic teacher education programme (*Research question 1*). To measure this attitude, a questionnaire distinguishing six aspects of an inquiring attitude was developed. This questionnaire was completed by 260 student teachers. Furthermore, a curriculum analysis was conducted to provide insight into the curricula of the professional and academic programmes, particularly regarding the way in which research was addressed. The second study (Chapter 3 and 5) provides insight into *the involvement of graduates of academic programmes in inquiry-based working* and *factors influencing this involvement*. Furthermore, the *development* in inquiry-based working was investigated in this study. A longitudinal approach was chosen to answer the research questions. Interviews were held with 10 academic teachers and their school leaders over three subsequent years. Furthermore five teachers were observed during meetings with their school teams in the first year of data collection. The data obtained from the first round of interviews (and the observations) were used to describe teachers' inquiry-based working in their classrooms and schools (Chapter 3; *Research question 2*) and the personal and organisational conditions that influence teachers' inquiry-based working (Chapter 3; *Research questions 3*). The data obtained during the subsequent rounds were used to answer *Research question 4*, concerning the development of their inquiry-based working (Chapter 5).

The third study also addressed *Research questions 2 and 3*, this time using quantitative methods and focussing on both graduates of regular and academic teacher education programmes (Chapter 4). The study compares regular and academic teachers (N=201), using data collected with a newly developed questionnaire measuring teachers' involvement in inquiry-based working and factors influencing this involvement.

The main findings of the studies are discussed in Chapter 6. Furthermore, limitations are described, and implications for future research are considered.



**Figure 1.** Graphical overview of this dissertation.

# CHAPTER

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# 2

# **Stimulating teachers' inquiring attitude in academic and professional teacher education programmes**

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## **ABSTRACT**

This study investigated differences between the inquiring attitudes of student teachers who followed an academic programme and student teachers who followed a professional programme in teacher education. Differences between students were assessed through a survey among 260 students and interviews with nine students. Differences between the curricula of both programmes were explored through a curriculum analysis. In particular, academic students appeared to have a more inquiring attitude than professional students. They had a more critical attitude towards classroom situations and a higher motivation to use and perform research. Teacher research was integrated in the curricula of both academic and professional programmes. However, the academic programme addressed a larger variety of forms of research and the focus on research was more consistent throughout the programme than in the professional programme.

### **Keywords**

Initial teacher education; Teacher research; Inquiring attitude; Research based teacher education; Research competences; Primary education.

## INTRODUCTION

Many authors have pointed to the need to educate teachers with an inquiring attitude. It is assumed that teachers with an inquiring attitude and competences to use and perform research will be able to continually evaluate, innovate and improve their teaching. This is necessary in a society in which education is faced with continuous changes and new challenges (Cochran-Smith and Lytle 2009; Munthe and Rogne 2015, Niemi and Nevgi 2014). More analytical and research-oriented skills are supposed to be needed for developing “new forms of teaching and learning for the future” (Niemi and Nevgi 2014, 131). Therefore, an increasing need is felt to integrate research in teacher education programmes. In several countries such as Finland, Portugal, France and Malta, research has been integrated in academically oriented programmes for teacher education (e.g. Afdal 2018; Darling-Hammond 2017; Gleeson, Sugrue, and O’Flaherty, 2017; Flores 2016; Hulse and Hulme 2017; Menter 2015; Niemi and Nevgi 2014). In the Netherlands, academic primary teacher education programmes at the bachelor level have recently been established in universities with the aim of educating teachers with an inquiring attitude, who are able to use and perform research in their own practice (Snoek, Bekebrede, Hanna, Creton and Edzes 2017). The regular, professionally-oriented teacher education programmes in the Netherlands are bachelor programmes organised in institutes for higher professional education (Van der Linden, Bakx, Ros, Beijaard, and Vermeulen 2012). Compared to the regular programmes, in the academic programmes more attention is paid to research, both academic educational research and teacher research.

Little is known, however, about the results of integrating research in teacher education, in terms of how this improves student teachers' inquiring attitude. There is a need for more knowledge about how the research dimension is reflected in teacher education curricula and how this contributes to the learning experiences of preservice teachers (Flores 2016). The purpose of this study was to compare the inquiring attitude of students who followed an academic or a professional programme in primary teacher education. Differences between students were investigated, and the programmes were compared in terms of how research is addressed in the curricula.

### **What is an inquiring attitude?**

Teachers with an inquiring attitude are more likely to use and conduct research to improve their own practices (Schulz and Mandzuk 2005). Many studies on teacher education have already focussed on students' inquiring attitude (e.g., Cochran-Smith and Lytle 2009; Gray 2013; Maaranen and Krokfors 2008). However, the concept of an inquiring attitude is often not clearly defined (Cochran-Smith and Lytle 2009; Meijer, Geijsel, Kuijpers, Boei and Vrieling 2016). Meijer et al. (2016) refer to an internal reflective dimension and an

external knowledge sourcing dimension. The internal reflective dimension is aimed at critical reflection of teachers on their practices, resulting in changes in their actions. The external knowledge sourcing dimension consists of using literature or searching for knowledge by experts related to problems observed in practice.

Van der Rijst (2009) described an inquiring attitude more specifically in six aspects: the inclination to be critical, to share, to know and understand, to achieve, to innovate and to take responsibility. These aspects can refer to several situations in the teaching practice. An inclination to know, for example, refers to wanting to gain deeper insight in classroom situations, for instance by searching for literature or conducting research. An inclination to be critical concerns, for instance, a critical attitude about literature or about a specific teaching method. An inclination to understand can refer to teachers' motivation to understand more about their students and their specific needs.

### **Stimulating an inquiring attitude in teacher education**

A small number of studies have considered the relationship between the integration of research in teacher education and the inquiring attitude of student teachers. However, the results of these studies are not consistent. Gray (2013) and Maaranen and Krokfors (2008) evaluated initial teacher education programmes with a focus on research. It appeared that students in these programmes learned to use and conduct research, and also gained valuable knowledge about their classroom and pupils. Furthermore, they appeared to be motivated to be involved in research after their study. Both studies conclude that the integration of research in the curriculum stimulated several aspects of student teachers' inquiring attitude. For example, students indicated to use literature in order to get information about specific student behaviour and to evaluate interventions or teaching methods which they implemented in their classrooms. The survey of Niemi and Nevgi (2014) showed that the integration of research in teacher education contributed to a critical attitude of student teachers. However, these findings are not confirmed by the research of Volk (2010) and Reis-Jorge (2007). Volk (2010) questions the value of integrating research in initial teacher education, since he found that only a few teachers had been involved in research one year after graduating. Teachers interpreted research as sophisticated formal paper work which was not applicable in their daily work. Reis-Jorge (2007) concluded that the highly structured nature of rules in academic research had a negative effect on the motivation of teachers to use research.

These different results may be attributed to different conditions. It is interesting to explore under which conditions the integration of teacher research in teacher education is experienced as valuable for the development of an inquiring attitude by student teachers. A focus on the connection of research with the classroom situation and the introduction of competences for performing research from the beginning of the study

were found to be important aspects in this respect (e.g. Amir Mandler, Hauptman and Gorev 2017; Gray 2013; Maaranen and Krofors 2008; Niemi and Nevgi 2014; Segall 2010; Van der Linden et al. 2012). In the study of Van der Linden et al. (2012), students stated that 'working on realistic tasks' connected to the teaching practice was one of the most important aspects that contributed to their inquiring attitude. In studies of Maaranen and Krofors (2008), Gray (2013) and Van der Linden et al. (2012), research was integrated in several courses with the aim of stimulating a continuous developmental process of students. It is found in these studies that by implementing research from the beginning, students are educated to use and conduct research in reflecting on educational issues.

In order to stimulate students' inquiring attitude, research competences are being integrated in teacher education programmes. Jacobi and Van der Rijst (2010) described 18 competences needed in different phases of conducting a research study: being able to formulate problem statements and hypotheses, develop a research design, collect data, analyse and interpret the data, and report the research results. These competences can be used to evaluate the integration of research in a curriculum.

### **Present study**

In the present study, the inquiring attitude of students from an academic programme and a professional programme in teacher education were compared by means of a questionnaire and interviews with students. Furthermore, the curricula of academic and professional programmes were compared by means of a curriculum analysis and interviews.

The central research questions of this study were formulated as follows:

To what extent and how does the inquiring attitude of student teachers who followed an academic or professional curriculum in teacher education differ?

How do these differences reflect the way in which research was addressed in the academic or professional curriculum?

### **Contextual background**

The context of this study is initial teacher education for primary schools in the Netherlands. Teacher education institutes have a considerable amount of freedom to organise their own curriculum in the Netherlands. There is no national curriculum; only end goals are described, but the educational content is compiled by the institutes themselves.



A distinction is made between institutes for higher professional education and universities. The regular initial teacher education in the Netherlands is organised in institutes for higher professional education which will be described in this paper as ‘professional institutes’. The research curriculum in the professional programmes is closely connected to teaching practice. As far as these programmes have integrated research in the curriculum, the focus is on teacher research, mostly small-scale research, for example design based research, action research or other forms of research that are directly connected to teaching practice (van der Linden et al. 2012).

From 2008 on, six Dutch universities started an academic programme in collaboration with professional institutes. In these academic programmes, more attention than in the regular professional programmes is paid to both academic educational research and teacher research. Students are educated in methodology and statistics, and they are introduced to scientific literature in order to learn to perform academic educational research. Furthermore, student teachers learn to perform teacher research in their classroom or in their school organisation (Snoek et al. 2017; Van der Wal-Maris 2017). This study focuses on the academic programme of VU University in Amsterdam. This programme was developed by VU University in collaboration with four professional institutes. Student teachers follow a study programme at both the university and one of the professional institutes. Half of the curriculum of the academic students consisted of courses at one of the professional institutes, and the other half was followed at the university. After four years, students received an academic Bachelor of Science degree in pedagogical science and a Bachelor degree for teaching in primary education.

## **METHODS**

### **Study design**

The first research question (focusing on differences in the inquiring attitude of student teachers who followed an academic or a professional programme) was investigated with a questionnaire. Furthermore, interviews with nine students were conducted to gain more in-depth information about students’ inquiring attitudes. To answer the second research question (which focuses on the way in which research is addressed in the academic and professional curricula), a curriculum analysis was performed, and interviews were held with (the same) nine students.

### **Participants**

The questionnaire was completed by 260 student teachers. Characteristics of the participants are displayed in Table 1. Students were approached for participation during

lectures. A small portion of the respondents (8%) completed the questionnaire as an internet survey. The researcher followed a script for introducing the questionnaire. The same information was provided in the internet survey.

**Table 1.** Characteristics of participants

Characteristics	Professional programme (n = 230)	Academic programme (n = 30)
Age		
19	20	0
20	55	7
21	64	11
22	45	8
> 23	46	4
Gender (Man/Women)	36/194	1/29
Third year student	119	15
Fourth year student	111	15

*Note.* The difference in the number of academic and professional participants was caused by the fact that the academic education started in 2008. Therefore, there were not as many academic student teachers as professional student teachers available at the time of the study.

The 26 students, who were in the last year of the academic programme, were approached for the interviews during lectures. Nine students were willing to participate. They followed both parts of the professional programme (at the professional institute) and the academic programme. As these students were engaged in both the professional and the academic programme, these students were able to reflect on differences between these programmes.

### **Inquiring attitude of student teachers**

A questionnaire was constructed to measure the six aspects of an inquiring attitude (the inclination to be critical, to share, to know and understand, to achieve, to innovate innovative and to take responsibility). These aspects are elaborated in 49 competences (Jacobi and Van der Rijst 2010). For example, the inclination to be critical includes competences like 'asking critical questions', 'being critical about your work, about the work of others and about research' and 'writing a discussion for a research article'. The inclination to innovate concerns competences like 'formulating new ideas or recommendations based on research results'. The inclination to know includes competences like 'wanting to solve complex and new problems'. These competences were listed in the questionnaire at random. Student teachers indicated whether they were capable of these competences with a 'yes' (1) or a 'no' (0). For each student, a total score for all the competences and a score for each of the six core aspects of an inquiring attitude were calculated. Van Beishuizen, Spelten and Van der Rijst (2012) used the questionnaire in this way before, but no information about validity and reliability was

reported in their study. The internal consistency for our sample showed a Cronbach's Alpha of 0.91 for the total score and varied between 0.90 and 0.91 for the scales (the six aspects).

The semi-structured interviews contained questions about students' attitudes towards research and their motivation to use research in practice.

### *Analyses*

A one-way between-groups multivariate analysis of variance was performed to compare the inquiring attitudes of students from the professional and the academic programme. The dependent variables were the aspects of an inquiring attitude. The independent variable was participation in one of the programmes (academic / professional).

Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices and multicollinearity with no serious violations noted. However, the results of the Kolmogorov-Smirnov test ( $z=0,081$ ), ( $p<,001$ ) indicated a non-normal distribution of the total score and the scores for the different aspects. The distribution of the scores seemed skewed to the right. The skewness was calculated and appeared lower than -1 for the total score (skewness =  $-0,65(0,15)$ ). For all aspects of an inquiring attitude, except for the aspect of being critical, the skewness appeared to be higher than -1. However, multivariate tests are considered as robust to modest violations of normality (Pallant 2007, p. 277).

The interviews were recorded and transcribed verbatim to prevent interpretation bias. Transcripts were sent to the participants for member check and corrected if necessary. Content analysis was employed using a pre-prepared coding scheme based on the research questions (Miles and Huberman 1994). This scheme contained codes for the aspects of an inquiring attitude as described by Jacobi and Van der Rijst 2010 (for instance 'being critical'). First, within-case matrices were composed for each participant. Thereafter, a cross-case analysis was performed to look for patterns in the data. The interpretations of the first researcher were evaluated by another experienced researcher. Different interpretations were discussed until consensus was reached.

### **Curriculum analysis**

The curricula of both the academic programme of VU University Amsterdam and the programmes of the four collaborating professional teacher education institutes were analysed. The curriculum analysis included the complete curriculum of the professional teacher education institutes (not only the part of the curriculum that was followed by the academic students). A contact person of each institute was asked to send all documents

(course manuals, curriculum descriptions etc.) with information about how research was integrated in the programme.

These documents were analysed using the method of content analysis (Miles and Huberman 1994). A pre-prepared coding scheme based on the literature and the research questions was used. Four codes were defined in this scheme. The first code was 'courses containing research assignments'. Research assignments referred to assignments in which students were involved in different aspects of conducting research, like conducting an interview, observation, collecting data, analysing quantitative and qualitative data or writing a literature review. The other codes were 'place of the courses in the study programme', 'forms and methods of research' (with sub codes: large-scale, small-scale, quantitative or qualitative, interview, survey observation, etc.), 'use of (research) literature' and 'competences for conducting research'. For this last code, use was made of the 18 competences for conducting research described by Jacobi and Van der Rijst (2010). Examples of these competences are presented in Table 2.

**Table 2.** Examples of competences for performing research

Phases	Competences		
<b>Development of a research design</b>	Naming the elementary phases of the research process.	Conducting empirical research with other students including all phases of the research process.	Determining the most suitable research method for a certain problem.
	Searching for scientific literature for a certain issue.	Knowing quantitative and qualitative methods of research and being able to apply these methods on elementary level.	Knowing methods of sampling and being able to pull a representative sample.
<b>Analysing and interpreting data</b>	Analysing data with the help of elementary statistical techniques and interpreting results.	Interpreting and drawing general conclusions based on data by statistical testing	Analysing data by advanced statistical techniques.
<b>Being able to formulate problem statements and hypotheses</b>	Dividing complicated issues into partial issues.	Judging issues of fellow students.	Formulating an original issue independently.

*Note.* These competences are translated from the report of Jacobi and van der Rijst (2010).

First, a within-site analysis was performed in which the documents of each study programme were coded using the pre-prepared coding scheme. Thereafter these matrices were further analysed in order to identify 1) the amount of courses which contained research assignments, 2) the distribution of these courses over the years of the study programme, 3) the forms and methods of research addressed, 4) the use of literature and 5) the competences for conducting research addressed. A report containing the main findings for each study programme was returned to the contact persons of the institutes for verification and corrected if necessary. Finally, differences between the academic and professional programmes were analysed using cross-site analysis.

Interviews with nine students (the same students who were involved in the study of inquiring attitude) were used to gather additional information about students' perceptions of the curriculum. The interviews contained questions about students' experiences with the programme of the professional institutes as well as the programme of the university. Codes for research in the curriculum (for instance 'attention for research in the programmes', and 'connection with the educational practice') were added to the coding scheme for the interviews (described in section 2.3.1). A content analysis was employed to analyse the data (Miles and Huberman 1994).

## RESULTS

### To what extent and how does the inquiring attitude of student teachers who followed an academic or a professional curriculum in teacher education differ?

To answer the first research question, data from the questionnaire and the interviews were used.

#### *Results of the questionnaire*

A comparison of the combined dependent variables of the professional and academic student teachers showed a statistically significant difference ( $F(6, 253) = 5.02, p < .001$ ; Wilks' Lambda is .89; partial eta squared = .11). Academic students scored significantly higher on an inquiring attitude than students from the professional teacher education institute. The effect size (eta squared = .11 indicates a medium effect (Pallant 2007, 208). Table 3 shows the results for the one-way between-groups multivariate analyses of variance.

When the results for the dependant variables were considered separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of 0.008, was the aspect of being critical ( $F(1, 258) = 18.19, p < .001$  partial eta squared = 0.07) indicating a medium effect. An inspection of the mean scores indicated that students from the academic programme ( $M = 8.8, SD = 0.41$ ) scored higher than students from a professional institute ( $M = 6.95, SD = 0.15$ ) on the aspect of being critical. No significant differences were found for the other aspects.

**Table 3.** Differences in the aspects of an inquiring attitude

Aspects	Items	Professional mean scores	Academic mean scores	F	P	Effect
Inclination to be critical	10	6.95 (.147)	8.80 (.407)	18.190	> .001*	0.066
Inclination to share	9	8.13 (.067)	8.53 (.185)	4.185	.042	0.016
Inclination to know and understand	9	7.38 (.117)	8.07 (.323)	3.974	.047	0.015
Inclination to achieve	8	6.41 (.104)	6.87 (.288)	2.240	.136	0.009
Inclination to innovate	7	5.78 (.098)	6.07 (.271)	.974	.325	0.004
Inclination to take responsibility	6	5.25 (.066)	5.03 (.183)	1.260	.263	0.005

\*  $p = .008$ , the alpha level was adjusted using the Bonferroni correction.

### *Results of the interviews about an inquiring attitude*

All interviewed student teachers showed an inquiring attitude. With regard to the different aspects of an inquiring attitude (Jacobi and Van der Rijst 2010), the aspects of 'being critical' and 'the inclination to know' were mentioned by all students. The other aspects were less evident in the interviews. These aspects became apparent in their motivation to achieve a better understanding of their classroom practice and their intention to search for literature and perform research to improve their practices. Examples of a critical attitude were found when students reported to critically reflect on their experiences in their classrooms and when they mentioned to be motivated to look for alternative possibilities. Student teachers mentioned several examples where they thought they would be able to use their research skills in practical classroom or school-related situations. For example, Kim first and then Amy mentioned,<sup>1</sup>

'I hope that through following this programme I will have a better understanding of the children in the classroom. I learned a lot about this, especially to wait a little longer before indicating a problem in a child. I will search for more information if there is a problem. [...] I would like to look further in the whole school, is there enough attention for the high and low performing children; how does the teacher react and is this the right way to act as a teacher?'

'I try several approaches from literature and reflect on the effects. [...] You don't get anything you need but you have to go after it yourself. You have to adapt an attitude to look for the information you need.'

### **How do these differences reflect the way in which research was addressed in the academic or professional curriculum?**

To answer this question, we investigated the curricula of the academic and professional programmes through document analysis and interviews with students. Results of the curriculum analysis are displayed in Table 4 and further described in the following section.

---

1 Pseudonyms are used.

**Table 4.** The focus on research in the academic and professional curricula

	<b>Academic curriculum</b>	<b>Professional curriculum</b>
<b>Courses involving research assignments</b>	12	2 - 9
<b>Courses involved in years of the study</b>	Year 1, 2, 3 and 4	Year 2, 3 and 4 or 3 and 4
<b>Forms and methods of research</b>	Academic educational research involving quantitative large-scale research as well as teacher research involving qualitative small-scale research.	Qualitative small-scale research involving observation interview or design based research.
<b>Use of literature</b>	Focus on academic and international literature	Focus on practical literature
<b>Competences for conducting research</b>	16 competences involved in curriculum.	9-14 competences involved in curriculum.

*Note,* The column of the professional curriculum contains information of 4 professional programmes

#### *Courses involving research assignments*

The results in Table 4 demonstrate that there were more courses involving research assignments in the academic programme compared to the professional programmes. The courses of the academic programme were distributed over all the years of the study. There were differences between the four professional programmes. The amount of courses containing research assignments varied from two to nine. Differences were also found in the distribution of these courses over the years of the study. Two programmes included research assignments from the start of the second year. In the other programmes, these courses were provided in the third and fourth years. In both the academic and the professional programmes, students were required to conduct a research project for their bachelor thesis.

#### *Forms and methods*

The forms and methods included in the professional programmes were mostly focussed on qualitative and small-scale research. All research assignments were related to a classroom or a school situation. In all programmes, attention was paid to different forms of qualitative research, such as observations and interviews. Design-based research, in which students develop and evaluate their own teaching materials, was also included in most programmes. An example of such research assignments was the following:



*Design an observational list focussed on classroom management. The items in the list are based on literature. You are going to conduct research about the quality of your own classroom management using this observational list during three different educational activities.*

Two professional programmes also addressed forms of quantitative research. However, little attention was paid to statistical techniques to analyse quantitative data. Most programmes specifically described the importance of validity and reliability in research; however, only one programme addressed methods to increase this (such as triangulation and interrater reliability).

The forms and methods in the academic programme were mostly related to quantitative research. Nine courses were focussed on statistics or methodology. In these courses, much attention was paid to methods for increasing validity and reliability (such as triangulation, and a reliability test). For most of the research assignments, existing data from large-scale surveys were used that were not related to school or classroom situations. For example students had to write a research report including statistical analysis of data derived from a survey among psychology students. Qualitative research assignments, such as 'collecting and analysing data from interviews', 'analysing a pedagogical discussion', or 'designing and evaluating a teaching plan for children with special needs', were also included in the curriculum. An example of an assignment was the following:

*Search for a scientific publication about a current development in the educational field and write a critical essay about this development. Try to pay attention to the practical applicability for teachers and write an instruction or recommendation for the educational practice.*

### *Use of literature*

Concerning the use of literature, the academic programme was mostly focussed on international literature such as research articles in peer-reviewed journals. Students in the academic programme had to read more articles and especially more articles in English as compared to students in the professional programmes. For example, in the second year of the academic programme, students received an assignment in which they had to ask their mentor teacher during their internship which teaching problem he or she experienced in the classroom. Through a literature study, in which student teachers had to use at least one peer reviewed international article and one practical publication, student teachers were asked to formulate recommendations for solving this problem. The literature that students had to use in the professional programmes was

mostly practical in nature. However, in some professional programmes, students were encouraged to use international scientific literature. For instance, in one programme, students were obliged to use an international source in their bachelor thesis (in the fourth year). In other programmes the focus was mainly on recent and relevant sources.

### *Competences for performing research*

Regarding the competences for performing research (Table 2), there were differences in the academic programme and the professional programmes regarding the amount of competences addressed. In the academic programme, 16 of the 18 research competences were addressed; in the professional programme the amount of competences varied from 9 to 14. The differences mainly concerned the competences related to the development of a research design and competences for data analysis, which were more present in the academic programme than in the professional ones. In the professional programmes, students could choose between different forms of research and were not obliged to conduct various forms of research. In the academic programme, students were involved in different research designs, both qualitative and quantitative. Competences related to data analysis were only addressed in the academic programmes. For example, in the academic programme, students learned to use SPSS for analysing the data. Furthermore, in the first and the third years student learned to analyse qualitative data. Competences related to data analysis were hardly addressed in the professional programmes. In two programmes, in the fourth year, some basic techniques of quantitative analysis, such as displaying tables and graphs and using percentages or mean scores, were taught. Qualitative data analysis was also mentioned in two programmes (for instance, the process of coding interviews was addressed in these programmes).

### *Results of the interviews about the curriculum*

The interviewed students had experiences in both types of education because they followed half of their study at the academic institute and the other half at one of the professional institutes. The results of the interviews confirm the findings of the curriculum analysis and provide some further insights. The most frequently mentioned difference between both programmes was the focus on quantitative large-scale research in the academic programme versus the focus on qualitative small-scale research in the professional programme. Students mentioned that different forms of research were discussed in the academic programme (such as interviews and observations), but most attention was paid to large-scale quantitative research. In the professional programme, research was always situated in the classroom.

All students valued the research in the academic programme higher than the research in the professional programmes. They felt that in the academic programme, more requirements were imposed on the quality of the literature used, and there was more attention for using high-quality research methods. Therefore, research in the academic programmes was seen as more significant and more generalizable than research in the professional programmes. Linda and Paula stated the following:

‘In the academic programme there is a lot of attention for research, mostly statistical research with large groups or with existing data to analyse. You also had to read lots of research articles. In the professional programme, it is more individual, how to deal with this class or this child [...] No comparative research for different classes and no experimental research or quasi-experimental research. In the professional programme, there is little information about research techniques. There is attention for conversations with children but no generalizable research.’

‘Research in the academic programme is closer to my view of research. In the professional programme it is all about research on a small scale and results are only applicable to one school or class. In the academic programme, students are taught to conduct research that is applicable in more situations.’

Although student teachers valued the quality and general scope of the research as it was taught in the academic curriculum, they also indicated problems concerning the connection between the research assignments and the classroom situation. Most students found that research as it was taught in the professional programme had a better connection to daily practice, as Linda mentioned:

‘Concerning the courses there is no connection. These courses are not applicable in the classroom. That would have been more interesting. This would involve more qualitative research with interviews and observations, but these methods were hardly provided. In the professional programme there is a better connection.’

However, a few students were able to describe the process of making the connection between theory and practice. Students who started their bachelor thesis seemed especially enthusiastic about the connection between academic research and educational practice, because the research subjects of their theses were relevant to their training schools. Some students, like Laura, seemed to be able to make this connection early in her studies, but for other students, this process required more time.

‘In the professional programme, it was all practice, and the academic programme was very theoretical, there is nothing in between. The making of this connection

was quite hard. After the first year, I got more competent to make this connection, for example to link practical examples to the theory. This was not completely clear at the beginning of the study.'

## 4. DISCUSSION

The purpose of this study was to gain insight in the inquiring attitude of student teachers who followed an academic or a professional programme in primary teacher education. This study also investigated whether and how these differences reflected the attention paid to research in the curricula of the academic and professional programmes.

The results of the questionnaire showed that students from the academic programme had a more inquiring attitude than students from the professional programmes. In particular, they appeared to be more critical. The interviews also showed such a critical attitude for academic students. The students had the intention to perform different forms of research in their classroom, and literature was used by these students to critically evaluate their practices. These findings largely correspond with the findings of other studies (Afdal and Spernes 2018; Gray 2013; Maaranen and Krokfors 2008; Niemi and Nevgi 2014).

The curriculum analysis showed that teacher research was integrated in both academic and professional programmes. However, the academic curriculum included more courses involving teacher research as well as academic educational research and these courses were distributed over all the years of the study. The focus in the academic programme was mainly on quantitative research. Research received less attention in the professional programme. In most professional programmes, research was not integrated throughout the entire curriculum. The focus in the professional programmes was mainly on qualitative methods. Students experienced the forms of research in the professional programmes as being better connected to classroom situations than in the academic programme.

Previous studies indicated that it is important to focus on the connection between research and educational practice (e.g. Afdal and Spernes 2018; Amir 2017; Gray 2013, Maaranen and Krokfors 2008; Niemi and Nevgi 2014; Reis-Jorge 2007; Ulvik and Riese 2016; Van der Linden et al. 2012; Volk 2010). In the academic programme in this study, the connection between research and the classroom situation received little attention, which was also found in previous studies (Afdal and Spernes 2018; Reis-Jorge 2007; Volk 2010). In these studies students were unable to reconcile the research elements in their

study programme with practicability in schools. The highly structured nature and the academic rules in research even had a negative effect on students' motivation to use research (Reis-Jorge 2007). In contrast to these studies, the students who participated in our interviews seemed to value academic research more than practical forms of research because they found they had learned to use valid and reliable research methods and techniques in their academic programme.

The difference between our results and those of Reis-Jorge (2007) and Volk (2010) may be explained by the way in which attention was paid to research in the teacher education programmes that were studied. The academic students in our study performed several research projects in which different forms of research were used in all the years of the programme. The students stated that connecting the theoretical knowledge with educational practice was difficult, especially in the beginning of their studies. However, the interviews suggest that after some time, academic students were able to make this connection. They indicated that they were able and motivated to perform (teacher) research and were willing to use literature to reflect on their practices. In contrast, in the study of Volk (2010) research was not integrated in the complete programme and students' experiences were that that research was not connected to practice. The attention to different forms of research, integrated in all years of the programme, may have been an important condition for developing an inquiring attitude in the academic programme in our study.

This study has some limitations. In the quantitative part of the study, only significant differences were found in the total score for an inquiring attitude and in the aspect of 'being critical'. This might be caused by the dichotomous design of the questionnaire, which may have caused a ceiling effect. For further research, a five-point Likert scale is recommended. Furthermore, the survey is based on self-reports. This method may have resulted in an overestimation or underestimation of students' competences. Another limitation is that students are not randomly distributed over the professional and the academic programme. Therefore we cannot attribute differences between the inquiry attitudes of students from both types of programme to the teacher education they followed. They may already have differed in this respect before the start of their studies. A study by Van der Wal-Maris (2017) indicates that students in the academic programmes have higher expectations for the curriculum focussed on research and innovation before entering the study than students in the professional programmes. Finally, it is important to mention the limitations of the interviews. No students who followed the complete professional curriculum were interviewed. The academic students participated in both programmes and were therefore able to compare the professional and academic parts of the programme. Nevertheless, these students did not follow the complete curriculum at the professional institute and may not have followed all research-related courses

in the professional programme. Therefore, conclusions can only be drawn tentatively. However, the different programmes were not only compared by interviews, but also by the curriculum analysis. The outcomes of the curriculum analysis showed similar results as the interviews.

Despite these limitations, this study provides valuable knowledge regarding the development of an inquiring attitude in teacher education. The approach of this study, with the combination of a survey, a curriculum study and interviews made it possible to reflect on the inquiring attitude of student teachers from different programmes which had not been illustrated in previous studies. The results of this study are relevant with regard to recent developments in teacher education. On the one hand there is a tendency to organise initial teacher education with a more academic orientation. On the other hand there is a contractionary trend to organise more pragmatic and short programmes which are mainly focussed on learning through the imitation of experienced teachers (Darling Hammond, 2017; Flores 2016; Menter 2015 Gleeson, Sugrue, and O'Flaherty, 2017). The outcomes of this study and other studies on academically oriented teacher education (eg. Afdal and Spernes 2018; Ulvik and Riese 2016) can serve as an argument against these pragmatic and short routes in teacher education. In recent times of continual changes and developments in society and education, teachers are expected to be critical and to be able to use and to perform research to improve and adjust their own practices (Chrochan Smith and Lytle, 2009 Munthe and Rogne 2015, Niemi and Nevgi 2014). However, developing an inquiring attitude and competences for using and conducting research is a complex and time consuming process (Afdal en Spernes 2018; Ulvik and Riese 2016). Therefore this study argues for teacher education programmes in which different forms of research are integrated through all the years of the programme. We suggest that teacher education with a good balance between a professional and an academic orientation with attention to research from the beginning of the study may be successful in stimulating the inquiring attitude of student teachers. It would be interesting to focus further research on graduates of both programmes to compare to what extent differences in the inquiring attitudes of teachers from both types of programmes diminish or increase once they start working as a teacher in a school, as well as how they actually make use of and perform research in their work as a teacher.

# CHAPTER

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# 3

# The involvement of academically educated teachers in inquiry-based working

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## **ABSTRACT**

In the Netherlands, academically oriented programmes for primary teacher education have recently been established. The aim of this study is to provide insight in the extent to which graduates from these academically oriented programmes are involved in different forms of inquiry-based working and which factors promote or hinder this involvement. Interviews with 10 academically educated teachers and their school leaders and observations of team meetings were used for this exploratory study. Three forms of inquiry-based working could be distinguished; systematic reflection, using research and conducting research. For most teachers, systematic reflection was part of their daily practice and most teachers made use of research; only a minority was involved in conducting research. Factors like ownership and the role of the teacher in the team were related to teachers' involvement in inquiry-based working. Teachers with a formal research function in inquiry-based working in their schools appeared to be more involved in inquiry-based working, especially in conducting research.

### **Keywords**

Teacher education; teacher research; academically educated teachers; inquiry-based working; novice teachers

## INTRODUCTION

In today's society with continual changes, inquiry-based working is an approach that has become increasingly important for teachers (Cochran-Smith 2009, Darling-Hammond 2017, Ellis and Castle, 2010). The term inquiry-based working refers to the involvement of teachers in various activities that incorporate research and the use of the findings thereof in their teaching practice. The involvement of teachers in inquiry-based working is considered important because they are expected to be able to evaluate and innovate their own education to teach their pupils the competences that are important in a changing society (Munthe and Rogne 2015, Niemi and Nevgi 2014). Teachers are also expected to make decisions based on evidence, meaning that they should use research findings and data such as learning outcome or observational data to improve their teaching (Uiterwijk-Luijk 2017).

To prepare student teachers for inquiry-based working, several countries (including Finland, Portugal, France and the Netherlands) have developed teacher education programmes with an academic orientation (Darling-Hammond 2017, Gray 2013, Hulse and Hulme 2012, Menter 2015 Niemi and Nevgi 2014). 'Academic' here refers to a university-based primary teacher education programme in which research is integrated throughout every year of the curriculum to develop academic and critical thinking skills. It is expected that graduates of such programmes will be able to use and conduct research when reflecting on their teaching and on educational issues at the school level (Maaranen & Krokfors 2008). However, little is known concerning the extent to which and how graduates of these academic programmes actually engage in inquiry-based working once they obtain teaching posts and the factors that promote or hinder such engagement. This study focuses on the involvement in inquiry-based working of novice teachers (i.e. those with 0–4 years of teaching experience), who have graduated from an academically oriented teacher education programme in the Netherlands.

## **Contextual background**

The context of this study is initial teacher education for primary schools in the Netherlands. Teacher education institutes have a considerable degree of freedom to organise their own curricula in the Netherlands. There is no national curriculum; only end goals are described, and the educational content is compiled by the institutes themselves.

Since 2008, several measures intended to improve the quality of primary teacher education (PTE) have been undertaken. One of these measures was the development of academic PTE programmes in universities. The regular (professionally oriented) PTE programmes in the Netherlands are bachelor programmes that are offered by institutes for higher professional education (van der Linden *et al.* 2012). These institutes have a more practical orientation than universities, and their attention to research is limited. The aim of academic PTE programmes is to encourage teachers to develop inquiring attitudes to incorporate research findings into their own teaching practices and schools, and to conduct their own research (Snoek *et al.* 2017, Van der Wal *et al.* 2018). Academically educated teachers are thus expected to be able to contribute to the improvement of the quality of education in their own classrooms and within their school organisations (Van der Wal *et al.* 2018). Both professional and academic programmes provide initial teacher education over the course of a curriculum of 4 years. In both types of programme, there is a strong focus on practical elements, as students spend at least 180 days gaining field experience in primary schools. In the academic programmes, however, more attention is devoted to both academic educational and teacher research. Baan, Gaikhorst and Volman (2019a) investigated the differences between the role of research in academic and regular programmes in detail. In the regular programmes, student teachers were often found to only be involved in forms of teacher research in their third and fourth years of study. In the academic programmes, however, there was a greater focus on qualitative and quantitative research methods, and student teachers learned how to analyse research findings. In the regular programmes, student teachers conducted small-scale studies, but little attention was paid to analysis of data, validity and reliability. Furthermore, there was a difference in the use of literature: In the academic programmes, the focus was primarily on scientific and international literature, whereas regular programmes were more practical in nature.

## **Inquiry-based working by novice teachers**

The terms teacher inquiry and teacher research are often used interchangeably to refer to research conducted by teachers. However, Munthe and Rogne (2015) note that certain characteristics of research do not necessarily apply to inquiry. The term research refers to the use of research methods intended to produce results for a wide audience, whereas inquiry is focussed on the creation of knowledge within a specific context. In this paper, inquiry-based working is used as an umbrella term to refer to any form of using and

conducting research in practice. Inquiry-based working refers to activities engaged in by teachers in which they use literature or conduct inquiries to reflect on their own practices or those of their school organisations. Many different types of inquiry-based working in education have been described in the literature, including self-study (LaBoskey and Richert 2015) data-based working (Schildkamp *et al.* 2012), evidence-based and evidence-informed practice (Biesta 2010, Wiseman 2010), action research and lesson study and design-based research (Chokshi and Fernandez 2005, Zwart *et al.* 2015). Although these types differ in their approaches, there are similarities in the underlying process. This process is characterised by an intentional and a systematic aspects and is focussed on the improvement of teaching (Cochran-Smith 2009, Ellis and Castle 2010).

It may be expected that including inquiry-based working in the curriculum of teacher education would lead to teachers engaging in inquiry-based working following the conclusion of their studies (Gray 2013, Maaranen 2010 van der Linden *et al.* 2012). However, little research intended to verify this assumption has been conducted. A considerable amount of research has focused on the development of the inquiry-based working of student teachers during their pre-service teacher education (Niemi and Nevgi 2014, Parsons *et al.* 2017, Reis-Jorge 2007, van der Linden *et al.* 2012, Volk 2010). However, these studies do not offer much information concerning the involvement of novice teachers in inquiry-based working once they have secured employment at schools, and only a few studies provide insights.

Maaranen (2009) and Laboskey and Richert (2015) described the experiences of teachers during the first years after the completion of their education. Most teachers were found to use the skills and knowledge that they had obtained during the research projects that they had worked on while writing their master's theses. They were, for example, found to engage in systematic reflection, to share knowledge, to consult scientific and professional literature and to have deeper understanding of their pupils; in addition, some of these teachers were still involved in the research projects that they had begun during the course of their master's theses. However, in a study conducted by Volk (2010), only one quarter of the 101 teachers interviewed were found to have conducted research during their first years; this is an unsatisfactory result when one considers the amount of time invested in research during initial teacher education. However, the results obtained by Volk (2010) also indicated that almost three-quarter of the teachers interviewed were using the knowledge that they had obtained during the research projects that they were involved in during their education. Butler and Schnellert (2012) found that all 38 of the teachers whom they interviewed were involved in some form of inquiry-based working, although there was a large variety in the systematic character of their inquiries: Some teachers were found to be involved in full action research cycles, whereas others were not found to systematically reflect on their teaching.

### **Factors that promote or hinder inquiry-based working**

Several factors affect the extent to which teachers are involved in inquiry-based working (Borg 2010, Butler *et al.* 2015, Uiterwijk-Luijk 2017). According to a review conducted by Zwart *et al.* (2015), factors such as time, cooperation in research, ownership, a supportive work environment, coaching on inquiry-based working and access to resources influence teachers' engagement in inquiry-based working. Other studies have demonstrated the importance of school leaders in terms of encouraging inquiry-based working (Schenke 2015).

However, it is not clear which factors are related to the involvement of *novice academically educated* teachers in inquiry-based working. There is little research available that focuses on the inquiry-based working of novice teachers and even less on academic novices (Dunn *et al.* 2008, Maaranen and Krokfors 2008, Schulz and Mandzuk 2005, van der Linden *et al.* 2012, Volk 2010). In the Netherlands, academically educated student teachers do appear to be motivated to engage in inquiry-based working after graduation, as they have been found to have had the intention to conduct different types of teacher research, and some mentioned that they had consulted the literature during their initial teacher education to evaluate their practical experiences (Baan *et al.* 2019a). Despite this motivation, organisational factors such as time constraints and lack of support in working environments seem to have a negative influence on the actual engagement in inquiry-based working of novice teachers (Parsons *et al.* 2017, Schulz and Mandzuk 2005, Volk 2010). Schulz and Mandzuk (2005) and Parsons *et al.* (2017) found that teachers were overwhelmed by the pressure and the lack of time experienced during their first years. Even teachers who were motivated to engage in inquiry-based working during teacher education were not able to do so (Schulz and Mandzuk 2005). Schulz and Mandzuk (2005) also found that, in the final year of their studies, the student teachers interviewed demonstrated a negative attitude towards inquiry-based working in schools. They were apprehensive that schools would not be interested in inquiry-based working and that school organisations would not be open to changes or new initiatives in teaching.

Surprisingly, the experiences of the novice teachers interviewed in the study conducted by Schulz and Mandzuk (2005) with regard to school cultures were very positive when compared with the expectations that they had as student teachers. All of the teachers interviewed mentioned a supportive culture with regard to inquiry-based working. However, despite this supportive culture, the impression of being overwhelmed in their first year of teaching limited their involvement in inquiry-based working. These findings might lead one to expect that factors such as time and a supportive work environment may have an important influence on novice teachers' involvement in inquiry-based working.

## The present study

Previous studies have focused on the involvement of teachers in inquiry-based working. Furthermore, the factors that promote or hinder the involvement of teachers in inquiry-based working have been described in several studies. However, these studies do not provide insight into the engagement of *novice academically educated* teachers in inquiry-based working. The purpose of the present paper was to identify how inquiry-based working is actually practised in schools and in which types of inquiry-based working academically educated teachers engage in. Academic teacher education programmes are focused on educating student teachers and providing them with the skills required to conduct research and to use research findings. It may thus be assumed that graduates of these programmes will become involved in inquiry-based working once they are working as teachers in schools (Maaranen 2009, Snoek *et al.* 2017). However, little research concerning this assumption has been conducted. Furthermore, the factors that influence the academically educated teachers' involvement in inquiry-based working remain unknown.

Therefore, the research questions investigated in this study are as follows:

1. To what extent and how are academically educated teachers involved in inquiry-based working in their initial years as a teacher?
2. What are the factors that promote or hinder the involvement of novice academically educated teachers in inquiry-based working?

## METHOD

A qualitative descriptive study was conducted using semi-structured interviews with 10 teachers and their school leaders. In addition, observations were made during team meetings to obtain better insight into the role played by academic teachers in this culture.

### Participants

For the purpose of this study, graduates of three academic programmes were selected by purposeful sampling. In total, 43 graduates and their school leaders were approached to participate. Only graduates who had been teaching for at least two days a week were selected. At least three teachers from each programme were selected. Ten teachers and nine of their school leaders were willing to participate in this study; the characteristics of these teachers are presented in Table 1.

**Table 1.** Characteristics of the participating beginning teachers and indication of whether an observation was conducted

<b>Name</b>	<b>Sex</b>	<b>Age</b>	<b>University</b>	<b>Experience</b>	<b>Observation</b>
Petra*	F	27	A	3 rd year	Yes
Anne	F	26	A	4 th year	No
Steve	M	27	A	4 th year	Yes
Mark	M	25	B	2 nd year	Yes
Lois	F	24	B	1 st year	Yes
Rob	M	24	B	2 nd year	Yes
Caroline	F	24	B	2 nd year	No
Jane	F	24	C	2 nd year	No
Amy	F	24	C	2 nd year	Yes
Marie	F	22	C	1 st year	No

\*Pseudonyms have been used

## Data collection

### *Interviews*

The interviews consisted of questions concerning teachers' involvement in inquiry-based working and the factors that influenced such involvement. The questions in the first part of the interview focused on the extent to which these teachers were involved in different types of inquiry-based working. First, an open question served to determine the teachers' involvement in inquiry-based working. The subsequent questions focused on the teachers' involvement in different types of research known from the literature (including self-study, data-based working, evidence-informed and evidence-based working, action research, design-based research and lesson study). School leaders were interviewed about their experiences with these teachers' involvement in different types of inquiry-based working. The school leaders were also asked if there were differences between their experiences of academically educated teachers and novice teachers from the regular education.

During the second part of the interview, the teachers were asked to indicate whether they had opportunities to engage in inquiry-based working and to identify the factors that influenced their involvement in inquiry-based working. Thereafter, the teachers were asked about the influence of factors known from the literature (time, cooperation in research, ownership, a supportive working environment, coaching on inquiry-based working in the school, access to resources and school leaders), as well as other factors mentioned by the teachers. The questions focussed on how these factors positively or negatively influenced their involvement in inquiry-based working. The duration of the interviews was approximately 45 min for the teachers and 30 min for the school leaders. To enhance the credibility of the findings of this research, two pilot interviews were conducted with teachers who were familiar with inquiry-based working in schools.

These teachers gave useful feedback from the perspective of practitioners concerning improving the interview guide and the language used.

### *Observations*

Observations were conducted during the team meetings in which six of the interviewed teachers participated (Table 1). The aim of these observations was to obtain further insight and to be able to illustrate the involvement and the role of the academic teachers in inquiry-based working in their schools. We observed team meetings in which issues related to inquiry-based working, such as analysing test results or discussing research projects, were discussed. The team meetings were all videotaped.

### **Analyses**

The qualitative data obtained from the interviews and observations were analysed using content analysis as described by Miles (1994). The program Atlas.ti (version 7) was used to code the interviews. The coding scheme was based on the research questions (the types of research and the factors of influence). The results of the analysis were summarised in the form of within-case matrices and cross-case matrices. The cross-case matrices were used for systematic analyses of the involvement of teachers in different types of inquiry-based working and the factors that influence this involvement. This approach provided insight into whether teachers actually engage in the different types of inquiry-based working that are described in literature and how they did so.

The videotaped observations were summarised in the form of a description of the team meetings. For the analysis of these descriptions, the same coding scheme was used as for the interviews.

The trustworthiness of the data was enhanced via several means: The interviews were recorded and transcribed verbatim to prevent interpretation bias. The transcripts were sent to the participants for member checks. All teachers and school leaders responded, and none requested changes. To enhance its credibility, multiple researchers were involved in this project. The coding scheme was repeatedly checked in the research team. Furthermore, the coding of 10% of the interviews was discussed with the second researcher. After this discussion, there was complete agreement. Finally, the cross-case analyses were evaluated by the research team, and direct quotes from the original interviews were included in the results section to illustrate and support the findings.



## RESULTS

### To what extent and how are academically educated teachers involved in inquiry-based working? (Research question 1)

The interviews and observations revealed a large variety in the extent to which academically educated teachers engaged in inquiry-based working. Most of the teachers mentioned being involved in certain aspects of research types that are known from the literature. For example, they reported observing their colleagues and preparing lessons together (which are aspects of lesson study). However, the cross-case analysis indicated that most of the teachers were not involved in complete research cycles, which are characteristic of research types such as self-study, lesson study or action research. Therefore, another structure for organising the ways in which these teachers engaged in inquiry-based working seemed appropriate. Three main forms of inquiry-based working appeared to cover all of the aspects that were mentioned by teachers, namely systematic reflection, using research and conducting research. Systematic reflection, for example, includes aspects of self-study and data-based working. Using research includes aspects of evidence-based and evidence-informed practice. Conducting research includes aspects of action research, lesson study or design-based research. Table 2 depicts the teachers' involvement in the three forms of inquiry-based working. The following sections elaborate on the ways in which these teachers were found to engage in these three different forms of inquiry-based working.

**Table 2.** Involvement of teachers in inquiry-based working.

Name	Systematic reflection	Using research	Conducting research	Experience
Petra	+	+	+	3 rd year
Caroline	+	+	+/-	2 th year
Mark	+	+	+	2 nd year
Lois	+	+	+/-	1 st year
Steve	+	+	-	4 th year
Anne	+/-	+	-	4 th year
Rob	+	-	-	2 nd year
Jane	-	+	-	2 nd year
Amy	+	-	-	2 nd year
Marie	+/-	+/-	-	1 st year

### Systematic reflection

All of the teachers mentioned that reflecting on their own teaching was a common practice for them. They observed and evaluated their lessons and asked themselves questions about their actions to improve their teaching. When teachers mentioned systematic aspects in their reflection we coded them as systematic reflection. Five teachers referred to systematic aspects, for example the use of an observation instrument, in their observations. Furthermore, nine teachers reported that they

systematically used data in their reflections. These teachers analysed test results and designed teaching plans based on such analyses to improve results. The majority (seven) of the teachers also used sources of information other than test results; for example, they asked children for feedback or conducted interviews to receive more information about their own teaching or about the social-emotional development of children. Steve's reflection practice serves as an example:

*I am continuously reflecting on my teaching by using a sort of a research cycle. For example, I use an instrument to reflect on my behaviour in the classroom towards the children twice a year. I analyse the results to see how the children evaluate my behaviour as a teacher. Afterwards, I try to adapt my behaviour on the basis of the results.*

The majority (six) of the school leaders also mentioned reflection in the classroom as an important aspect of inquiry-based working by academically educated teachers. They reported that these teachers demonstrated a critical and analytical attitude during their reflections. One of the school leaders made the following observation:

*Petra engages in a significant amount of self-reflection. She is very good at indicating when she thinks she is not successful. She comes to me with clearly formulated questions and applies the answers. Her reflection skills are strong.*

When comparing the academically educated teachers with those teachers who had received regular education, most school leaders noted differences in the capacity of each group of teachers to reflect from a broader perspective. According to these school leaders, academic teachers reflect not only at the classroom but also at the school level. This capacity to analyse situations at the school level also became evident from their observations. Amy's school leader noted the following:

*What I do notice is that she looks very critically at everything, and that is quite special for a starting teacher. That is what I mostly see right now; she is critically analysing. [...] She is quick to identify issues both in both the classroom and in the school organisation and she is not afraid to give her opinion. She is a full-fledged partner.*

### **Using literature**

Teachers used literature in different ways. Eight teachers indicated that they use literature in their classroom to inform themselves about behavioural problems of children, for example those related to autism or an attachment disorder. Seven teachers consulted literature about effective learning methods or cooperative teaching methods. Five of these teachers mentioned that they used literature when interventions or new teaching

methods were introduced or evaluated in their schools. Caroline, for example, described the way in which she uses literature:

*In my class, I always compare what I do with the findings of the literature, and I also check if I recognise the things that are written in the literature in my classroom. I especially use literature that is focussed on behavioural issues and on children who need more help.*

Some teachers were critical about the lack of using literature in their schools. They mentioned that in their schools, decisions are not based on literature. A minority (three) of the school leaders mentioned the use of literature by academically educated teachers. Steve's school leader, for example, praised his motivation when it came to consulting the literature and sharing it with the team:

*He is more involved in research. He has sources available; he can easily get access to information. There is not a subject that he cannot get an article about to support his opinion. You do not see this in other teachers.*

In the majority of the observations, the academically educated teachers referred to literature related to the subjects discussed in team meetings. While we were observing Petra, for example, she shared an article about the research cycle in the classroom during the meeting. Teachers read this article during this meeting, and she guided the team in connecting the article to their specific situation.

### **Conducting research**

Three teachers were involved in research projects focused on the level of the school organisation. Mark and Petra held formal research positions in their school, as they were the coordinators of a research group focused on inquiry-based working. Caroline also participated in a research group. In these positions, these teachers were able to conduct research concerning, for example, interventions in math education or teaching highly gifted children. These three teachers mentioned being involved in aspects of the research process such as formulating research questions in a team, data collection through interviews, surveys or test results, collecting and evaluating these results, writing conclusions and making improvements to the teaching process. Mark described his involvement in conducting research:

*There are now three research groups, which focus on Positive Behavioral Support (PBS), highly gifted children and developing the talents of children. We are using the phases of the research process, which is nice because I practiced these phases often during*

*teacher education. We start with a research question, then look for theory, and then we observe or use surveys, and we receive feedback from one another.*

While we observed Mark, his role as an organiser of the research process became apparent. For example, he arranged for a student to collect survey data in several classes and to interview teachers and children. He also organised meetings in which the outcomes of the research projects were presented to the entire school team.

Forms of conducting research related to designing lessons were mentioned by only one teacher (Petra). Although five teachers reported being involved in the collaborative preparation of lessons, only Petra mentioned aspects of the cyclic approach that characterises design-based research and lesson study, including collaborative evaluation (e.g. through the observation of colleagues) and making subsequent improvements based on evaluation (Zwart *et al.* 2015):

*At the beginning of a new educational theme, we start with designing introduction activities. We do this together with other teachers. However, we have also used external help in organising experiments in the classroom. Then we observe each other and ask 'how do you conduct an experiment in your class?' How can you improve it, and what can somebody else learn from you? [...] It is also my function to stimulate this in the school.*

A minority (three) of the school leaders reported that the academically educated teachers were involved in conducting research. For example, they mentioned the role that these teachers played in research groups and their ability to use data. Caroline's school leader made the following observations:

*She has the knowledge, and she is able to use the data. She learned this in her teacher education, and she disseminates that knowledge to others. You can see that she is more capable of using data than other novice teachers. We saw this last year with the results of our survey about the pedagogical climate. She said 'give me these results'. She included the results in an Excel sheet, using graphs to provide information about the groups, and presented these results to the team. At that moment, we decided to ask her to join the research groups.*

## **What are the factors that promote or hinder the involvement of novice academically educated teachers in inquiry-based working? (Research question 2)**

Teachers mentioned that factors such as ownership, school leaders, time and a supportive working environment were important in terms of their involvement in inquiry-based working. Inquiry-based working also seemed to be related to the years of experience that teachers had at their schools and the respondents' formal research functions.

Most (eight) teachers reported that ownership in their schools had a positive influence. However, teachers interpreted *ownership* in different ways. Some teachers referred to *ownership* in relation to their approach to teaching. Examples of this include having the freedom to make their own choices concerning teaching and to experiment with different instructional or pedagogical approaches in their classroom, as explained by Lois:

*In this school, you have a lot of freedom. If we, for example, as teachers of grades 6, 7 and 8, would like to organise an entire week of education around a project, it is possible. One's own initiative is highly appreciated.*

This freedom promoted their engagement with inquiry-based working because it stimulated them to experiment with what works in the classroom. Mark, Petra and Caroline also referred to ownership in the sense of having an influence on school policy; they were also involved in inquiry-based working at the level of the school organisation. As Petra mentioned, *In my function, I help to develop the policy about inquiry-based working in the school. Together with a colleague, we write that policy using our knowledge and skills.*

Two teachers experienced a lack of *ownership* when it came to inquiry-based working among colleagues. Anne explained that knowledge within the school was not valued highly by her team members; she felt that they were more focused on external knowledge. She therefore expected that research conducted by fellow team members would not be valued highly within the team. This in turn had a negative impact on her own involvement in inquiry-based working.

Four teachers reported that their *school leaders* had a positive influence on these teachers' engagement with inquiry-based working. According to these teachers, an inquiring attitude, a vision with regard to inquiry-based working and the creation of ownership on the part of a school leader are conducive to inquiry-based working in a school. Five teachers reported having had negative experiences with regard to the influence of the school leaders at their schools. They experienced a lack of vision on the part of their school leaders when it came to inquiry-based working or a lack of continuity

in the management of their schools, which resulted in inquiry-based working not being considered a priority. Anne described this as follows:

*We are now in a situation in which an interim school leader is focused on getting things back on track within the organisation. There is a reason that he is here, and his priority is not to create a vision for inquiry-based working.*

School leaders were also mentioned as facilitators of the conditions *cooperation* and *supportive working environment*, which were identified as important when it comes to inquiry-based working. Five teachers mentioned the importance of aspects such as a positive team atmosphere and openness within teams. They also referred to the importance of the structural aspects of a school, such as the organisation of research groups. In schools with such groups, teachers conducted research and shared literature, research outcomes or good practices. Mark described the approach that had been adopted at his school:

*On these study afternoons, we share the results of the research process: Where are we? What are we doing? At the end of the year, we organise presentations in which all of the research groups describe their processes and outcomes. Because of this, everybody in the team is involved.*

Three teachers reported not having experienced a culture of conducting research in a team as having had a negative influence on their involvement in inquiry-based working. Eight teachers noted a lack of skills regarding inquiry-based working in their colleagues, who were often for the part not educated at an academic level. These teachers reported that most of their team members did not have the knowledge and the skills that are important when engaging in inquiry-based working. Therefore, they found it difficult to collaborate in inquiry-based working in their schools. Anne noted that *I think I have the skills for inquiry-based working, but most of my colleagues do not have these skills. Therefore, it is difficult to conduct inquiries appropriately.*

Six teachers reported that *time* had a negative influence on their actual involvement in inquiry-based working in their schools. These novice teachers reported having experienced heavy workloads (as a consequence of having just started teaching, working full-time or being responsible for a great deal of administrative work), which made it difficult for them to engage in research work. Marie explained the influence of time as follows:

*I am so busy with preparing my lessons and handling other tasks, such as correcting tests and reporting things in the administrative system, that I don't have time to engage in inquiry-based working.*

Nevertheless, some teachers mentioned that it is also a matter of teachers themselves being motivated for inquiry-based working and being willing to invest time: *'If it is really important to me, I make time for it. In school, I only have a limited amount of time in which to engage in inquiry-based working [...] I am doing it by my own motivation'* (Caroline).

Two teachers, with positive experiences concerning time in their school (Mark and Petra), were facilitated for inquiry-based working in the organisation. These teachers had a formal role in the organisation related to inquiry-based working and were therefore exempted from other tasks in the school.

Most teachers had not received any *coaching* in inquiry-based working and were therefore not able to assess the influence of this factor. Some teachers would appreciate *coaching* in inquiry-based working. Others had *coaching*, however they mentioned that the *coaching* was not sufficient because it was not at an academic level as Steve mentioned: *The coach did not have academic skills so she wasn't able to coach me. If someone with an academic background would coach me, someone who is on a higher level, then it would be a positive factor.*

Only one teacher (Mark) had positive experiences with *coaching*. He mentioned that *coaching* stimulates inquiry-based working because most teachers do not have research skills. Furthermore it helped him for example in searching for literature.

*There is always one member of the university in our research group, this is very motivating. She can help with searching for literature. I can also search for literature and coach my colleagues with this. However, it is good to have someone who has been involved in many research projects. I can also learn from it.*

Most teachers reported that *access to resources* had no impact on their actual involvement in inquiry-based working. Many teachers indicated that they had been exposed to the literature adequately during their teacher education and some were still studying towards master's degrees and thus had access to databases.

Beyond the factors known from the literature, the interviews and the observations also revealed factors influencing inquiry-based working that were related to teachers' *functions* in their schools and their *work experience*. In certain schools, teachers had a

*formal research function*, in which they were involved in inquiry-based working. Mark stated the following:

*Now I have also become the inquiry leader in school; therefore, I am more visible to others. If people have questions related to inquiry, I am available. I have more influence on the organisation, meetings and the research questions that we investigate within the school.*

In the observations, there was a clear distinction between the four observations in which teachers were mainly participants and the leaders of the meetings were external experts and the two observations in which the teachers (Mark and Petra) had *formal research functions*. In the latter observations, the academic teachers, as experts in inquiry-based working, led the meetings. Their research functions led to their skills with regard to inquiry-based working being recognised. These same teachers mentioned in the interview that they experienced that inquiry-based working was valued within the school organisation and played a role in the school's policy. Three teachers without a specific research function noted that such a function would lead to greater recognition of their roles within their teams. Steve made the following observation:

*You need a position or recognition in the school team. Now, some teachers know my academic background, but this does not mean that I have this position at school. I am still a novice teacher to them. I have the feeling that the knowledge that I share is not really appreciated.*

Another factor was years of *experience* as a teacher. Two teachers (Marie and Jane) had just started working as teachers a few months prior to the interviews and were therefore mainly focused on organising their classes. However, there were differences among those teachers who were in their second, third or fourth years. Some of these teachers were involved in several forms of inquiry-based working in their classrooms and in school organisations, whereas others were completely focused on their own classes. The latter preferred to first learn how to teach and to then to develop themselves through engaging in inquiry-based working. Marie mentioned the following:

*I am not sure, but I think the expectations of the people around me are that you are mostly busy with your class and not with the school organisation. [...] In my opinion, you first have to learn to be a good teacher, and then you can become more involved in other things.*



## Conclusion

The majority of the academically educated teachers interviewed in this study appeared to be involved in inquiry-based working in their classrooms. This mainly involved systematic reflection on their teaching and the use of literature. A few teachers also conducted research at the level of their school organisations. The interviews and observations revealed that factors such as ownership, a supportive working environment, cooperation, school leaders who encourage inquiry-based working and having a formal research function in the school were important in terms of determining teachers' involvement in inquiry-based working and that these factors were often associated. Teachers who expressed positive opinions about these factors and, in particular, those teachers who had formal research functions engaged in a wider variety of forms of inquiry-based working and tended to conduct research more frequently than teachers who had negative experiences with regard to these factors.

## DISCUSSION

Inquiry-based working is an approach in which teachers systematically reflect on and attempt to improve or innovate their teaching (Ellis and Castle 2010, Leeman and Wardekker 2014, Mitchell *et al.* 2009, van der Linden *et al.* 2012). To prepare student teachers for inquiry-based working, several countries have developed teacher education programmes with an academic focus (Darling-Hammond 2017, *et al.* 2017, Van der Wal *et al.* 2018). However, little is known about the extent to which and how graduates of these academic programmes actually engage in inquiry-based working once they have secured teaching posts and the factors that promote or hinder this engagement. The aim of this research was to obtain insight into the extent to which academically educated teachers are involved in inquiry-based working and the factors that influence this involvement.

The involvement of novice teachers in inquiry-based working has only been investigated in a limited number of studies (LaBoskey and Richert 2015, Maaranen 2009, Volk 2010). However, these studies did not focus on academically educated teachers. In addition, their outcomes were not consistent, which might be attributed to the fact that the authors of these works did not define inquiry-based working in a consistent manner. This study thus contributes to this gap in the literature in two ways: First, this study provides insight into how inquiry-based working is actually practiced in schools. Second, it contributes to the literature by focusing on academically educated teachers. The results indicated that teachers often mentioned certain aspects of research, such as collaborative preparation of lessons or the use of test results. However, most of the teachers interviewed were not involved in the complete research cycles that are characteristic of practice-based forms of research such as self-study, lesson study or action research. Our conceptualisation

of inquiry-based working, in which a distinction is made between systematic reflection, using literature and conducting research, contributes to the existing knowledge because this conceptualisation might better connect to the various forms of inquiry-based working that are actually practised in schools.

This study also provides insight into the factors that influence novice academically educated teachers' involvement in inquiry-based working. Such factors have been described in previous studies (Butler *et al.* 2015, Leeman and Wardekker 2014, Zwart *et al.* 2015); however, these previous works did not focus on academically educated teachers. The teachers interviewed in the present study indicated that 'ownership' was an important influential factor. Furthermore, whereas other studies have found that teachers experienced *little* ownership concerning their approach to teaching (Leeman and Wardekker 2014, Parsons *et al.* 2017), which was found to have a *negative* effect on their involvement in inquiry-based working, the majority of the teachers interviewed in our study *did* experience ownership and mentioned that it had a *positive* influence. This might be explained with reference to differences in how teachers interpreted the concept of 'ownership'. Some of the teachers interviewed in the present study valued their influence on school policy, but most teachers reported autonomy in teaching as a factor that had a positive influence on their involvement in inquiry-based working.

This study also identified a factor that has not been mentioned in previous research, namely having a formal research function. Teachers with such a function were found to be more involved in conducting research than teachers without such a function. More specifically, teachers with a formal research function more frequently indicated that they were able to utilise the research knowledge obtained during their academic education. Thus, in this study, having a formal research function was identified as an important factor influencing the involvement of academically educated teachers in inquiry-based working.

The academic teachers interviewed were often the only ones in their schools who had graduated from an academic teacher education programme, and they reported deficiencies in the research competences of their colleagues. Therefore, they experienced few opportunities to collaborate with other teachers with research expertise and to further develop themselves in this regard. Furthermore, the majority of the teachers interviewed reported receiving no coaching in inquiry-based working. Since the rise of academically oriented teacher education in the Netherlands is a recent development, there are not many graduates; therefore, the teachers whom we interviewed were often the only academically educated teachers in their respective schools. Recent literature has indicated that collaborative inquiry via internal or external social networks is a promising approach to teacher professionalisation (Butler *et al.* 2015, Newman and Mowbray 2012,

Willegems *et al.* 2017). This study found that academically educated teachers had few opportunities to collaborate with other teacher researchers in their schools (i.e. their internal networks). Therefore, support in the form of participating in an external network that includes academically educated teachers from different schools might be important for these teachers to further develop their research skills.

This study has some limitations, and further research on academically educated teachers is needed. The small-scale design made it possible to obtain detailed insight into the involvement of academically educated teachers in different forms of inquiry-based working and the factors that influence such involvement. However, due to the limited scale of the research design, it is not possible to generalise the results. In future research, it may be interesting to focus on the involvement in inquiry-based working of a larger group of teachers who graduated from different types of teacher education. Another limitation was that the teachers interviewed in this study varied in teaching experience. They were all novice teachers, but being a first-year or a third-year teacher can make quite a significant difference. It is questionable if it is realistic to expect involvement in inquiry-based working on the part of teachers who have just started teaching (Hulse and Hulme 2012). Further research could focus on the experiences and the development in terms of involvement in inquiry-based working of academically educated teachers over the longer term.

Despite these limitations, this study provides several new insights into the involvement of academically educated teachers in various forms of inquiry-based working. These insights may prove valuable in the development of academic programmes focused on educating teachers. The conceptualisation of inquiry-based working formulated in this article could be used to make conscious decisions regarding the focus on different forms of inquiry-based working in PTE programmes and to prepare academic student teachers for their roles as academically educated teachers in school organisations. Furthermore, the findings of this study could be used to encourage inquiry-based working in schools. School leaders can use the insights concerning inquiry-based working and the factors that influence the involvement of academically educated teachers when attempting to create opportunities for inquiry-based working in their schools.



# CHAPTER

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# 4

# **The involvement in inquiry-based working of graduates from academic versus practically oriented teacher education programmes**

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## **ABSTRACT**

This study investigated the involvement in inquiry-based working of graduates of research-intensive (academic) and practically oriented (regular) Dutch teacher education programmes. Differences between graduates from both types of programmes were assessed through a survey among 201 beginning teachers. Graduates of both programmes were involved in systematic reflection and in using research, however, they were less frequently conducting research. While academic teachers perceived themselves as more competent than regular teachers in inquiry-based working, there were few differences in their actual involvement in inquiry-based activities. Participation in a professional learning community appeared to stimulate the involvement of academic teachers in inquiry-based working.<sup>1</sup>

### **Keywords**

Teacher education; Beginning Teachers; Teacher Research; Academically educated Teachers; Inquiry-based Working.

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## INTRODUCTION

It has been argued for many years that teachers should be able to use and conduct research to evaluate and improve their own practices (Zeichner, 2003), as this contributes to their professional development and to school improvement (Borg, 2010; Mitchell, Reilly, & Logue, 2009). These new expectations of teachers call for a more academic orientation in teacher education programmes. In several countries such as the Netherlands, Norway, Singapore and Canada, there has been a tendency to start new academic teacher preparation programmes with an intensive focus on research in the curriculum (Darling-Hammond, 2017; Flores, 2017; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017; van der Linden, Bakx, Ros, Beijaard, & Vermeulen, 2012). In Norway and Finland, for example, student teachers carry out several projects during their studies that involve inquiry into pedagogical issues in their schools and using methodological tools to analyse these issues (Maaranen & Krokfors, 2008). However, little is known about the results of academically oriented programmes in terms of the actual involvement of graduates using and conducting research when they start working as teachers. Studies in this area are qualitative and small scale (Davis, Clayton, & Broome, 2018; Hulse & Hulme, 2012; LaBoskey & Richert, 2015; Schulz & Mandzuk, 2005; Zeichner, 2003). Therefore, in this study, the graduates of academically and professionally oriented programmes in Dutch teacher education were compared regarding their involvement in inquiry-based working in their schools. We were also interested in the factors that enhanced or hampered the involvement of both groups of teachers in inquiry-based working.

We use the term inquiry-based working to refer to a process of using and conducting research to evaluate and improve teaching (Baan, Gaikhorst, & Volman, 2018; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2016). With the term academically oriented (or research intensive) programme we refer to programmes that are organised in a university, have a strong focus on research in the curriculum and are aimed at developing academic skills and critical thinking (Davis et al., 2018; Maaranen, 2009; Snoek et al., 2017). In these programmes, research is not only integrated as a project in the final year of the study but also in earlier phases. The aim of such academic programmes is to educate teachers as reflective practitioners, who reflect on their practice by using and conducting research (Davis et al., 2018; Maaranen, 2010).

### **Academic teacher education and teachers' involvement in inquiry-based working**

As academic teachers are educated with the competencies for inquiry-based working, we expect them to use these competencies after graduation in their teaching practice. However, there is little knowledge available that supports this assumption (Koedel, Parson, Podgursky, & Ehlert, 2015). Some small scale studies have described teachers'



experiences concerning inquiry-based working after graduating from an academically oriented teacher education programme, (Davis et al., 2018; LaBoskey & Richert, 2015; Maaranen, 2009; Volk, 2010). The results indicated that most teachers used research in their practices and reflected critically on their teaching, but although some teachers were motivated to conduct research, few teachers were actually involved in conducting research. However, these were small scale studies, each involving only one academic teacher education programme. Furthermore, these studies were more focussed on the influence of the programmes on teachers' identity or attitude towards research than on the actual research activities in which teachers were involved (Dunn, Harrison, & Coombe, 2008; Goodnough, 2011; Schulz & Mandzuk, 2005; van der Linden et al., 2012; Vrijnsen-de Corte, Brok, Kamp, & Bergen, 2013a;)

### **Inquiry-based working**

Different forms of inquiry-based working have been described in the literature, such as self-study (LaBoskey & Richert, 2015), data-based working (Cochran-Smith & Lytle, 2009; Datnow, Park, & Kennedy-Lewis, 2013; Schildkamp, Ehren, & Lai, 2012), evidence-based and evidence-informed practice (Biesta, 2010; Nutley, Jung, & Walter, 2008; Wiseman, 2010), action research, lesson study and design-based research (Chokshi & Fernandez, 2005; Zwart, Smit, & Admiraal, 2015). Previous research has indicated that many teachers are involved in elements of these types of research, but often not in the complete research cycles that characterise most of these research types (Baan et al., 2018; Butler & Schnellert, 2012). In our conceptualisation of inquiry-based working we distinguish three different forms, namely, 1) using systematic reflection, 2) using research, and 3) conducting research. The first form, systematic reflection, refers to activities that result in a teacher's deeper understanding of his or her classroom (LaBoskey & Richert, 2015). However, we only consider reflection a form of inquiry-based working when it entails systematic and intentional aspects (Cochran-Smith & Lytle, 1999; Ellis & Castle, 2010; LaBoskey & Richert, 2015). Teachers can make use of e.g. observations, test results or feedback by students for systematic reflection on their teaching. Concerning the second form, using research as a teacher, two different approaches have been described in literature (Biesta, 2010; Nevo & Slonim-Nevo, 2011; Nutley et al., 2008). The first approach is evidence-based practice, which entails application of results of research into teaching effectiveness, or specific teaching interventions (Wiseman, 2010). In the other approach, evidence-informed practice (Biesta, 2010), research results are not directly applied in practice but teachers adapt research knowledge to their local context (Cordingley, 2008). The third form of inquiry-based working is conducting research; when teachers conduct research they make use of the whole research cycle to analyse problems in their teaching, their classrooms or their school or to evaluate improvements that are being tried out (Zwart et al., 2015). This categorization appeared to connect well with how teachers are actually involved in inquiry-based working in their schools

(Baan et al., 2018). Furthermore, we found that some teachers were using systematic reflection, were using research, or were incidentally conducting research at the level of their own classroom, whereas others were involved in inquiry-based research at the level of the school organisation. This conceptualisation of inquiry-based working, which distinguishes three different forms at two levels (classroom and school) was used in this study to describe the actual involvement of graduates from academic and professional teacher education programmes in inquiry-based working.

### **Factors influencing teachers' involvement in inquiry-based working**

A considerable amount of research has focussed on the factors that influence the inquiry-based working of teachers. Both individual and organisational factors appear to be related to the extent to which teachers are involved in inquiry-based working.

Regarding the organisational factors, a literature review by Zwart et al. (2015) identified factors such as time, a supportive climate, ownership, the quality of support and access to sources. Time is mentioned in many studies as an important factor (Butler & Schnellert, 2012; Schulz & Mandzuk, 2005; Volk, 2010; Willegems, Consuegra, Struyven, & Engels, 2017). Teachers often experience inquiry-based working as extra work on top of their primary teaching task (Deluca, Bolden, & Chan, 2017; Willegems et al., 2017); they feel there is too little time available for inquiry. A supportive climate for inquiry-based working refers to a research-supportive culture and a research structure within the school organisation (Vrijnsen-de Corte et al., 2013a). An important aspect of such a supportive culture is collaboration. Many forms of inquiry-based working require collaboration with other teachers. Therefore, it is important that there is a safe atmosphere in the team and a common focus on educational improvement (Deluca et al., 2017; Vrijnsen-de Corte et al., 2013a). Furthermore, research by Uiterwijk-Luijk et al., (2016) and Deluca et al. (2017) showed that the competencies and motivation of colleagues for inquiry-based working had an influence on teachers' involvement in inquiry-based working. A research-supportive structure refers to the presence of team meetings where teachers collaboratively evaluate their teaching or where knowledge is shared (Butler, Schnellert, & MacNeil, 2015; Vrijnsen-de Corte et al., 2013a). Ownership of teachers has been interpreted in different ways. Baan et al. (2018) referred to ownership as the freedom of teachers to make choices in their own teaching, to try out different approaches in their classroom and to influence the school's policy. Zwart et al. (2015) discuss ownership specifically related to teachers' roles in research; ownership then refers to autonomy and freedom of teachers to make choices in research projects. The factor quality of support refers to aspects of coaching in inquiry-based working by someone with more expertise. The review of Zwart et al. (2015) also pointed out access to sources as an important organisational factor. They recommended that teachers who are involved in inquiry-based working must have the ability to obtain relevant sources.

A final factor is the role of school leaders; they can encourage inquiry-based working by being interested in teachers' inquiry-based activities and by linking inquiry and research to school development (Schenke, van Driel, Geijssel, & Volman, 2017).

In addition to organisational factors, several individual factors have been found in previous research that are related to inquiry-based working. Firstly, the attitude or motivation and self-efficacy of teachers regarding inquiry-based working appeared to be related to the involvement in inquiry-based working (Vrijnsen-de Corte et al., 2013a; Uiterwijk-Luijk et al., 2016). Vrijnsen-de Corte et al. (2013a) also found that the years of teaching experience were related to the involvement of teachers in inquiry-based working (more experienced teachers were working more inquiry-based). Butler and Schnellert (2012), however, found that there were no differences in the involvement in inquiry-based working that could be related to teachers' experience. They pointed out that teachers who took on formal leadership roles in research projects in their school organisations were more involved in inquiry-based working. Previous research has also indicated that participation in a professional learning community (PLC) appeared to be related to the involvement of academically educated teachers in inquiry-based working (Baan et al., 2018; Newman & Mowbray, 2012; Willegems et al., 2017).

The studies discussed in this section provide insights into factors that are important for the involvement of teachers in inquiry-based working. However, these studies do not distinguish between factors that are important for teachers' participation in each of the three different forms of inquiry-based working (using systematic reflection, using literature and conducting research). Using reflection, using literature and conducting research may be influenced by different factors. Furthermore, most studies on this topic do not distinguish between beginning teachers from different orientations in teacher education (academic versus professional).

### **The present study**

Previous studies have indicated a need for more research on the actual involvement of graduates from different teacher education programmes (academic/research-intensive versus professional) in inquiry-based working and on which factors influence this involvement. This study is focussed on academic and professional oriented initial teacher education programmes in the Netherlands. Teacher education institutes have a considerable amount of freedom to organise their own curriculum in the Netherlands. There is no national curriculum; only end goals are described, but the educational content is compiled by the institutes themselves.

Since 2008, several measures have been taken to increase the quality of primary teacher education. One of these measures was the organisation of academic programmes

in six universities. The regular, professionally oriented primary teacher education programmes in the Netherlands are bachelor programmes organised in institutes for higher professional education (van der Linden et al., 2012). These institutes have a more practical orientation than universities, and attention for research is limited. The aim of the academic primary teacher education programmes was to educate teachers with an inquiring attitude, who can use and conduct research in their own teaching practice and in their schools (Snoek et al., 2017; Van der Wal et al., 2018). Academically educated teachers were thus expected to be able to contribute to the improvement of the quality of education in their own classroom and in the school organisation (Van der Wal et al., 2018). Both professional and academic programmes provide initial teacher education in a curriculum of 4 years. In both types of programme, there is a strong focus on the practical elements. Students spend at least 180 days in field experiences in primary schools. In the academic programmes, however, more attention is paid to both academic educational research and teacher research. Baan, Gaikhorst and Volman (2019a) investigated differences in the role of research in academic and regular programmes in more detail. In the regular programmes student teachers were involved in some forms of teacher research, often in the third and fourth year of study only. In the academic programmes, there was a strong focus on qualitative and quantitative research methods and student teachers learned how to analyse research results. In the regular programmes, student teachers conducted small scale studies but there was little attention for analysis of data and for validity and reliability. Furthermore, there was a difference in the use of literature; in the academic programme, the focus was mainly on scientific and international literature whereas the literature in regular programmes was more practical in nature.

This study focuses on the involvement of graduates of academic and regular programmes in inquiry-based working in their first year as teachers (we refer to these teachers as academic and regular teachers). A questionnaire was developed to investigate the following research questions:

1. To what extent are academic and regular teachers involved in inquiry-based working, and what are the differences between these groups of teachers?
2. How do academic and regular teachers rate the presence of factors that may influence inquiry-based working, and what are the differences between these groups of teachers?
3. What are the factors influencing the involvement of academic and regular teachers in inquiry-based working?

## METHODS

### Respondents

An online survey was completed by 201 Dutch primary school teachers, 89 academic teachers (8 male, 81 female) and 113 regular teachers (8 male, 104 female). The average age was 27.13 for the academic teachers and 25.18 for the regular teachers. The years of teaching experience are displayed in Table 1. A purposive sampling strategy was used to select academic and regular teachers with similar teaching experience: only teachers working in a school for at least half a year for a minimum of 2 days a week and with less than six years of experience were asked to participate. The academic teachers were graduates of 6 universities. The regular teachers were graduates of 6 institutes for higher professional education. Teachers were invited to participate by email. Use was made of the correspondence data of several teacher educational institutes in the Netherlands. Teachers received a gift voucher after completing the survey. The data were analysed anonymously.

Table 1. Years of of teaching experience

Experience	Regular teachers ( <i>n</i> = 112)	Academic teachers ( <i>n</i> = 89)
Experience in teaching		
1st year	28.3%	28.1%
2nd year	28.3%	28.1%
3rd year	22.1%	27%
4th year	18.6%	11.2%
5th year	2.7%	5.6%*

*\*Since academic teacher education only started in 2008 with a small number of students, the number of teachers working at a school at the moment of data collection (April-June 2017) was relatively low, especially teachers in their fourth and fifth year.*

### Variables and instruments

A questionnaire was developed, to answer the research questions of this study. The first part of the questionnaire focussed on teachers' involvement in inquiry-based working. The second part contained questions about the factors influencing teachers' involvement in inquiry-based working. Additionally, background characteristics such as age, sex and teaching group were obtained.

Prior to the data collection a qualitative pilot study was conducted among six teachers to evaluate the content of the instrument on structure, readability and connection to educational practice. Based on the outcomes of this pilot, two items were removed (because these items appeared to be interpreted differently by the teachers) and four other items were adapted (because their formulation was too complicated).

The first part of the instrument was based on the outcomes of a previous qualitative study, in which three different forms of inquiry-based working were distinguished: (1) systematic reflection; (2) using research; and (3) conducting research (Baan et al., 2018). The first part of the instrument included 26 items related to these three different forms of inquiry-based working, on two different levels: (a) in teachers' own classrooms; and (b) in the school organisation. The 34 items, divided over 6 scales (systematic reflection, using research and conducting research at the level of the classroom or at the school level) are displayed in Table 2. Teachers indicated the extent to which the items applied to them on a 5-point Likert scale (*1: That does not apply to me at all; and 5: That applies to me completely*). Most items of this questionnaire were based on two instruments that have been used in previous studies. One was a questionnaire about the inquiring attitude of teachers (Meijer, Geijsel, Kuijpers, Boei, & Vrieling, 2016). The other was a scan that aims to determine to which extent schools are characterised by a professional learning culture (Schenke, Sligte, Admiraal, Buisman, Emmelot, Meirink, & Smit, 2015). Other items were based on the outcomes of our previous qualitative study (Baan et al., 2018).

**Table 2.** Scales and items measuring inquiry-based working

	Factor Loading	Cronbach's alpha
<b>1. Systematic reflection in the classroom</b>		.62
<i>I reflect on my actions to check whether I should improve my approach.</i>	.573	
<i>By thinking about my actions, I have changed my usual approach in a number of ways.</i>	.437	
<i>If I recognise behavioural or learning problems, I think about what I can do differently.</i>	.437	
<b>2. Systematic reflection at the school level</b>		.77
<i>My colleagues and I reflect on the education in our school.</i>	.821	
<i>My colleagues and I reflect on our way of teaching.</i>	.726	
<i>My colleagues and I think about school wide issues.</i>	.616	
<b>3. Using research in the classroom</b>		.89
<i>I read publications or other sources to increase my knowledge about a specific educational topic.</i>	.806	
<i>I read books, articles and/or professional publications about education.</i>	.683	
<i>I surf the Internet to find interesting sources to use in my work.</i>	.590	
<i>When I identify behavioural problems or learning problems, I look for literature that focuses on this.</i>	.747	
<i>I make use of knowledge derived from literature to motivate the children in the class.</i>	.722	
<i>I apply things I read in research in my teaching.</i>	.639	
<i>I adjust my actions based on new knowledge.</i>	.623	
<i>I critically evaluate the research that I read.</i>	.665	
<i>I support my opinion using arguments derived from research.</i>	.739	
<b>4. Using research at the school level</b>		.84
<i>I share new insights about education with colleagues.</i>	.787	
<i>I talk with colleagues about research results.</i>	.789	
<i>I send articles that I read to colleagues.</i>	.748	
<i>My colleagues and I discuss how we can use approaches that are proven to be effective.</i>	.719	
<b>5. Conducting research in the classroom</b>		.81
<i>I design new teaching methods and evaluate these on the basis of observations or student results.</i>	.547	
<i>I use the research cycle (formulating a research question, composing a research design, collecting data, analysing and interpreting) to gain insight into the situation of individual children.</i>	.856	
<i>I use the research cycle to study my own teaching practice.</i>	.948	
<b>6. Conducting research at the school level</b>		.88
<i>My colleagues and I turn questions from the school into research questions.</i>	.906	
<i>My colleagues and I develop an approach for research focussed on questions from the school.</i>	.926	
<i>My colleagues and I use the research cycle in order to improve our education.</i>	.835	
<i>In our school I encourage the use of surveys, interviews or observations in to collect information about developments in the school.</i>	.559	

To confirm the presence of the six scales of inquiry-based working (systematic reflection, using research and conducting research, all at the teacher and school level), a confirmatory factor analysis was performed (using IBM Amos, version 25). The six-factor structure was evaluated using  $\chi^2$  fit statistics along with their associated robust comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized Root Mean Square Residual (SRMR). Because of the sensitivity of the chi-square to sample size, we used the normed chi-square ( $\chi^2$  divided by df; Kline, 2015). Model fit was considered acceptable when normed chi-square is below 3.0 (Bollen, 1989), CFI falls within the range of 0.90 -0.95 and RMSEA is  $\leq 0.07$ , with a confidence interval with an upper limit of 0.08 (Brown, 2006; Cheung & Rensvold, 2009; Lewis 2017).

For the initial model,  $\chi^2(614) = 1303.21$  and normed  $\chi^2 = 2.12$  ( $1303.21/614$ ). The goodness of fit estimates were CFI = 0.88, RMSEA = 0.07 with a 90% interval of 0.069-0.080. Because CFI was below the cut-off criterion of .90, items were evaluated on factor loading (factor loading should be  $> 0.40$ ) and content (does the item reflect the content of the factor appropriately) to see if modifications could be made to improve model fit. Seven items were removed based on these criteria (for example, the item *'me and my colleagues observe each other's lessons and we discuss these lessons'* was removed from the reflection scale because the focus on observations seemed too specific). Furthermore, modification indices were inspected for possible further improvement of model fit. The items *'I critically evaluate the research that I read'* and *'I support my opinion using arguments derived from research'* had a high residual correlation. Since these items were based on critical thinking which was mentioned in our previous studies as a distinctive aspect of academic teachers in comparison to regular teachers (Baan et al., 2018, 2019a) it seems theoretical plausible that these items measure the same aspect of inquiry based working. Therefore an extra correlation was added between these items. Model fit of the adjusted confirmatory factor analysis was acceptable:  $\chi^2(283) = 595.39$ ,  $p < .001$ , normed  $\chi^2 = 1.97$  ( $595.39/283$ ), CFI = .90, RMSEA = .07 with a 90 % interval of 0.061-0.078). Furthermore, all factor loadings were at least  $>0.40$ , and most factor loadings were  $>0.6$  (see Table 2).

The Cronbach's alpha of most of the scales indicated a good internal consistency. However, the internal consistency of the scale 'systematic reflection in the classroom' was rather low (Table 2). The first item of this scale had a kurtosis of 1.45 and a mean score of 3.96, indicating a ceiling effect.

The aim of the second part of the questionnaire was to investigate which factors have an influence on teachers' involvement in different forms of inquiry-based working. Therefore, factors derived from previous studies and existing instruments (Baan et al., 2018; Geijssel, Krüger & Slegers, 2010; Schenke et al. 2015, 2017; Uiterwijk et al. 2016)



were translated into items related to the different forms of inquiry-based working. For instance, in the literature, the organisational factor of 'school leader' has been found to be an influencing factor for inquiry-based working (Geijsel, Krüger & Slegers, 2010; Schenke et al. 2017). In the questionnaire for this study, we specified this factor for systematic reflection ('school leader who stimulates reflection'), for using literature ('school leader who stimulates using literature') and for conducting research ('school leader who stimulates conducting research'). Another example is the individual factor of 'teacher motivation' which was specified as motivation for reflection, motivation for using research and motivation for conducting research. Teachers indicated the extent to which the organisational factors (9 items specified for the different forms of inquiry based working; time, ownership, school leader, collaboration, motivation of colleagues, support of colleagues, research supportive structure, (external) support on inquiry-based working and access to sources) were present in their school. Furthermore teachers indicated the extent to which the individual factors (5 items specified for the different forms of inquiry based working, namely; the motivation of the teacher, the competencies of the teacher, participation in a PLC and the teacher's years of experience) applied to them. Those factors were rated on a 5-point Likert scale with 1 being not present at all, and 5 being present to a large extent. The factors of teaching experience and participation in a professional learning community were rated in a different way. Teaching experience was rated in years of experience (1 = 1 year, 2 = 2 years, etc.). The factor of participation in a professional learning community was rated as 1 = no participation in a professional learning community, 2 = participation as a participant or 3 = participation as a coordinator or a leader.

### **Data analysis**

For the first and second research question, two multivariate analyses of variance were performed to compare 1) academic and regular teachers' involvement in inquiry-based working, and 2) academic and regular teachers' perceptions of individual and school factors related to inquiry-based working. In both analyses, the independent variable was the type of teacher education (academic or regular). In the first analysis, the dependent variables were the average scores on the six forms of inquiry-based working (systematic reflection in the classroom, systematic reflection at the school level, using research in the classroom, using research at the school level, conducting research in the classroom and conducting research at the school level). In the second analysis, the dependent variables were the scores on the items measuring the teachers' perceptions of the presence of these factors (for example, time, a stimulating school leader, collaboration and motivation of the teacher). Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices and multicollinearity. One outlier was found and removed from the analysis. All other assumptions were met.

Regression analyses were used to answer the question, what individual and organisational factors influence the six forms of inquiry-based working. For each form of inquiry-based working, a regression analysis was conducted for academic and regular teachers separately, including all 13 items measuring individual and organisational factors as predictors. This resulted in a total of 12 regression analyses.

## RESULTS

### To what extent are academic and regular teachers involved in inquiry-based working, and what are the differences between these teachers?

The mean scores of academic and regular teachers on the different forms of inquiry-based working are displayed in Table 3. The scores illustrate that both groups of teachers are mostly involved in systematic reflection, followed by using research. The mean scores of conducting research are relatively low. Furthermore, teachers appeared to be more involved in forms of inquiry-based working in the classroom than in forms of inquiry-based working at the school level.

A multivariate effect was found in the involvement of inquiry-based working of academic and regular teachers:  $F(6, 195) = 4.05, p = .001$ ; Wilks' Lambda = 0.89; partial  $\eta^2 = .11$ . Univariate testing showed that the only difference between the two groups reaching statistical significance was using research in the classroom:  $F(1, 201) = 6.00, p = .015$ ; partial  $\eta^2 = .03$ , indicating a small effect. An inspection of the mean scores indicated that academic teachers scored significantly higher on using research in the classroom than regular teachers did. No significant differences were found for the other forms of research.

**Table 3.** Differences in the involvement in inquiry-based working between academic and regular teachers

	Academic mean (SD)*	Regular mean (SD)*	F	p	partial $\eta^2$
Systematic reflection C**	4.37 (.47)	4.35 (.47)	3.50	.063	.017
Systematic reflection S	3.62 (.75)	3.47 (.89)	1.66	.199	.008
Using research C	3.66 (.69)	3.41 (.75)	5.57	<b>.019</b>	.027
Using research S	3.00 (.82)	3.00 (.91)	0.12	.727	.001
Conducting research C	2.55 (.99)	2.43 (.93)	0.79	.377	.004
Conducting research S	2.12 (1.01)	2.29 (1.01)	1.47	.226	.007

Note: Significant  $p$ -values ( $\leq .05$ ) are reported in bold type.

\*Mean scores on a 5 point Likert scale (1 = not applicable to me at all., 5 = fully applicable to me)

\*\* C = in the classroom and S = at the school level.

### How do academic and regular teachers rate the presence of factors that may influence inquiry-based working, and what are the differences between these groups of teachers?

The one-way multivariate analysis of variance on the factors related to inquiry-based working showed a significant difference between academic and regular teachers on the combined dependent variables,  $F(28, 171) = 4.32$   $p < .001$ ; Wilks' Lambda = 0.59; partial  $\eta^2 = .41$ . Univariate between-subject tests showed several significant differences between the two groups of teachers. Due to the number of factors involved in the analysis, only the significant differences are displayed in Table 4. The academic teachers appeared to score lower on school organisational factors (namely, time, team motivation and support) than the regular teachers. This means that the academic teachers perceive these factors as being less available in their organisation. In contrast, mean scores of the academic teachers on several individual factors (self-reported competence and motivation) were higher than those of the regular teachers. This indicates that academic teachers see themselves as more competent regarding all forms of inquiry-based working and more motivated for systematic reflection.

**Table 4.** Differences between the perceptions of regular and academic teachers concerning influencing factors for inquiry-based working.

Factors with significant difference*	Academic mean(SD)**	Regular mean (SD)**	F	p	partial $\eta^2$
Time to C.R. ***	1.89 (.94)	2.21 (.99)	5.30	<b>.018</b>	.028
Motivation team to C.R.	2.42 (1.04)	2.80 (1.02)	6.85	<b>.010</b>	.033
Support in U.R.	1.94 (.89)	2.43 (1.05)	12.53	<b>&lt;.001</b>	.060
Support in C.R.	1.83 (.94)	2.35 (.110)	12.51	<b>.001</b>	.059
Access to sources	2.34 (.99)	3.20 (.91)	40.25	<b>&lt;.001</b>	.169
Competencies related to S.R.	4.38 (.67)	3.96 (.76)	16.62	<b>&lt;.001</b>	.077
Motivation related to S.R.	4.26 (.80)	3.83 (.95)	11.71	<b>.001</b>	.056
Competencies related to U.R.	4.06 (.70)	3.32 (.91)	39.05	<b>&lt;.001</b>	.165
Competencies related to C.R.	4.01 (.71)	3.37 (.89)	30.55	<b>&lt;.001</b>	.134

\*Only the factors with significant differences are included in the Table.

\*\* Mean scores on a 5 point Likert scale (1 not present at all, and 5 present to a large extent.).

\*\*\*S.R. refers to systematic reflection, U.R. refers to using literature C.R. refers to conducting research.

## **What are the factors influencing the involvement of academic and regular teachers in inquiry-based working?**

*Factors influencing the involvement of academic teachers in inquiry-based working.*

Table 5 shows several factors with a significant influence on the different forms of inquiry-based working for the academic teachers. *Participation in a PLC* appeared to have an influence on using and conducting research at the school level and on systematic reflection in the classroom. The *motivation* of the teachers for inquiry-based working appeared to have an influence on systematic reflection and using research in the classroom and on using research in the school. *Competences* for inquiry-based working were related to reflection in the classroom. Furthermore, the organisational factors of *time*, the motivation of the team and the *support of colleagues* were related to different forms of inquiry-based working.

*Factors influencing the involvement of regular teachers in inquiry-based working*

The results of the regular teachers (Table 6) demonstrate that the factor of *access to sources* and *teaching experience* were related to the involvement of the regular teachers in several forms of inquiry-based working. Additionally, *motivation* appeared to have an influence on using research in the classroom and at the school level and in conducting research at the school level. *Time* was related to conducting research in the classroom and in the school. Furthermore, factors such as *a stimulating school leader* and *collaboration* had an influence on systematic reflection at the school level. Finally, *competencies for using research* had an influence on using research in the classroom.

**Table 5.** Regression analysis of individual and organisation factors (academic teachers)

Factors	Systematic reflection C		Systematic reflection S		Using research C		Using research S		Conducting research C		Conducting research S	
	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p
<b>Time</b>	.052(.047)	.638	.313(.066)	<b>.002</b>	.041(.076)	.718	.179(.086)	.102	.034(.168)	.829	.218(.135)	.100
<b>Motivation of the team</b>	-.054(.056)	.666	.316(.078)	<b>.005</b>	-.160(.080)	.191	-.195(.090)	.096	-.161(.157)	.329	-.105(.126)	.438
<b>School leader</b>	.141(.050)	.236	.167(.070)	.135	.048(.063)	.682	.134(.072)	.234	.141(.135)	.397	.095(.108)	.487
<b>Ownership</b>	-.176(.052)	.082	-.173(.073)	.054	.126(.089)	.249	.022(.101)	.830	.102(.145)	.490	.144(.116)	.237
<b>Collaboration</b>	.225(.064)	.063	.100(.090)	.346	-.028(.093)	.811	.179(.106)	.115	.014(.159)	.920	.085(.127)	.461
<b>Support of colleagues</b>	-.221(.052)	.071	.017(.073)	.875	.017(.078)	.890	.286(.088)	<b>.016</b>	.096(.129)	.497	.016(.103)	.891
<b>Supportive Structure</b>	-.117(.040)	.279	.061(.056)	.522	.022(.070)	.847	.166(.080)	.124	-.044(.096)	.757	.009(.077)	.941
<b>Support on inquiry-based working</b>	-.019(.053)	.869	.060(.074)	.566	-.013(.097)	.914	-.124(.110)	.299	.105(.181)	.541	.238(.145)	.095
<b>Access to sources</b>	.048(.051)	.447	-.065(.071)	.500	.090(.078)	.799	-.026(.089)	.809	-.125(.125)	.319	-.117(.100)	.259
<b>Participation in PLC</b>	.203(.063)	<b>.041</b>	.128(.088)	.141	.136(.093)	.164	.224(.105)	<b>.018</b>	.156(.156)	.174	.207(.125)	<b>.030</b>
<b>Competences</b>	.287(.075)	<b>.009</b>	.025(.105)	.792	.047(.105)	.662	.019(.120)	.850	.169(.170)	.174	.140(.137)	.173
<b>Motivation</b>	.351(.062)	<b>.001</b>	.110(.087)	.245	.542(.078)	<b>&lt;.001</b>	.318(.089)	<b>.002</b>	.271(.129)	.062	.222(.103)	.065
<b>Teaching experience</b>	-.019(.037)	.843	.089(.052)	.286	.019(.057)	.193	.179(.064)	.055	-.022(.096)	.850	.077(.077)	.414
<b>Model information</b>	F (13, 74) = 4.49 p < .001, R <sup>2</sup> = .441		F (13, 74) = 7.32 p < .001, R <sup>2</sup> = .562		F (13, 74) = 4.19 p < .001, R <sup>2</sup> = .314		F (13, 74) = 5.21 p < .001, R <sup>2</sup> = .478		F (13, 74) = 2.18 p = .019, R <sup>2</sup> = .276		F (13, 74) = 5.87 p < .001, R <sup>2</sup> = .508	

Note: Significant p-values (≤.05) are reported in bold type.

**Table 6.** Regression analysis of individual and organisation factors (regular teachers)

Factors	Systematic reflection C		Systematic reflection S		Using research C		Using research S		Conducting research C		Conducting research S	
	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p	b (s.e.)	p
<b>Time</b>	.041(.048)	.753	.168(.068)	.081	.108(.083)	.218	.076(.094)	.457	.296(.097)	<b>.005</b>	.268(.099)	<b>.007</b>
<b>Motivation of the team</b>	.077(.061)	.559	-.030(.086)	.759	-.139(.080)	.191	-.052(.098)	.639	-.032(.102)	.782	.047(.106)	.669
<b>School leader</b>	-.033(.052)	.796	.217(.073)	<b>.024</b>	-.039(.066)	.731	.061(.078)	.581	.174(.087)	.169	.196(.090)	.104
<b>Ownership</b>	.093(.055)	.393	.095(.078)	.237	.018(.076)	.857	.108(.089)	.281	.045(.095)	.617	.160(.098)	.112
<b>Collaboration</b>	.087(.077)	.604	.227(.108)	<b>.036</b>	-.106(.108)	.406	-.114(.127)	.359	-.048(.121)	.678	.021(.125)	.845
<b>Support of colleagues</b>	-.122(.068)	.401	.096(.096)	.373	.013(.094)	.914	.123(.111)	.312	-.084(.108)	.467	-.073(.111)	.505
<b>Supportive Structure</b>	-.078(.045)	.510	-.009(.064)	.918	-.071(.069)	.520	-.034 (.081)	.756	.022(.072)	.831	.060(.074)	.539
<b>Support on inquiry-based working</b>	-.052(.053)	.674	.042(.074)	.644	.110(.085)	.350	.184 (.100)	.110	.156(.091)	.143	.045(.093)	.657
<b>Access to sources</b>	.085(.055)	.433	.192(.077)	<b>.018</b>	.325(.077)	<b>.001</b>	.314(.091)	<b>.001</b>	.085(.089)	.339	.013 (.92)	.875
<b>Participation in PLC</b>	-.022(.069)	.826	-.019 (.097)	.798	.001(.099)	.993	-.125 (.116)	.146	-.036 (.122)	.681	-.019(.125)	.816
<b>Competences</b>	.125.069)	.267	-.029(.096)	.724	.195(.077)	<b>.040</b>	-.002(.091)	.986	.117(.092)	.186	-.077(.095)	.361
<b>Motivation</b>	.243(.060)	<b>.047</b>	.080(.084)	.375	.280(.082)	<b>.010</b>	.268(.097)	<b>.011</b>	.176(.089)	.092	.211(.091)	<b>.035</b>
<b>Teaching experience</b>	.082(.040)	.410	.227(.056)	<b>.003</b>	.227(.058)	<b>.013</b>	.205(.069)	<b>.021</b>	.117(.066)	.156	.161(.068)	<b>.043</b>
<b>Model information</b>	F (13, 98) = 1.65 p < .084, R <sup>2</sup> = .180 F (13, 98) = 9.22 p < .001, R <sup>2</sup> = .550 F (13, 74) = 4.69 p < .001, R <sup>2</sup> = .384 F (13, 98) = 5.27 p < .001, R <sup>2</sup> = .412 F (13, 98) = 6.36 p < .001, R <sup>2</sup> = .458 F (13, 98) = 7.73 p < .001, R <sup>2</sup> = .507											

Note: Significant p-values ( $\leq .05$ ) are reported in bold type.

## CONCLUSION AND DISCUSSION

The aim of this study was to obtain insight into the extent to which academic teachers and regular teachers were involved in inquiry-based working in the first years after graduation. Previous studies on this topic were often small scale studies focussing on the graduates of one specific research-intensive teacher education programme (Davis et al., 2018; Hulse & Hulme, 2012; Schulz & Mandzuk, 2005). Furthermore, most studies were aimed at attitudes or identities related to inquiry-based working instead of teachers' actual involvement in inquiry-based activities (Dunn et al., 2008; Goodnough, 2011; van der Linden et al., 2012). In this study, the graduates of academic and professional teacher education programmes were compared by using a self-developed questionnaire focussing on graduates' involvement in inquiry-based working. The instrument appeared to be useful for measuring the involvement of teachers in different types of inquiry-based working (1) using systematic reflection, 2) using research and 3) conducting research) and on two different levels (in the classroom and at the school level).

The results of this study showed that beginning academic teachers, compared to beginning regular teachers, were more involved in using research in the classroom. However, there were no differences between regular and academic teachers in the other forms of inquiry-based working (research question 1). Furthermore, the results showed that academic teachers were less positive about factors as time, support and motivation of their team to conduct research and the access to sources in comparison with regular teachers (organisational factors), but they rated their competencies for all forms of inquiry-based working (individual factor) higher than regular teachers (research question 2). Finally, the results showed that some factors are specifically related to the involvement in inquiry-based working of academic teachers whereas other factors are related to regular teachers (research question 3). For example, for regular teachers the years of experience appeared to be related to several forms of inquiry-based working; these teachers are more involved in inquiry-based working when they have more teaching experience. For the academic teachers, a role in a PLC had a positive effect on their involvement in inquiry-based working.

The results of this study suggest that academic teachers do not seem to get the opportunity to use all their competencies in practice; although they rated their competencies for all forms of inquiry-based working higher than regular teachers, they were only more involved in one form (using research in the classroom). A possible explanation can be found at the school organisational level; school factors affect the extent to which teachers can apply, use and further develop the research competencies that they acquired during their teacher training (Willekens et al., 2017). In this study, both groups of teachers were quite critical about the availability of the school organisational

factors support, time, access to sources and motivation of their team to conduct research. Academic teachers were even more critical than regular teachers. Either these factors were actually less present in the schools of the academic teachers or these teachers are more aware of their absence.

These insights might be useful for school organisations in supporting the professional development of academic teachers. School leaders should be aware of the competences of the academic teachers and should try to create and maintain factors on the school organisational level in order to stimulate their development. This study gives insight in what kind of factors are relevant for academic (and regular) teachers. For instance, for academic teachers it appeared to be important to have a more formal position in their school organisation (for example in a PLC) which provides them the opportunity to use their competences for inquiry-based working.

The results of this study are also relevant for teacher education programmes. The present study showed that motivation of teachers for inquiry-based working had an influence on several forms of inquiry-based working. Teacher education programmes can motivate teachers for inquiry-based working by integrating research projects in the complete curriculum or by connecting research project to the education practices of student teachers (Gray, 2013; Maaranen & Krokfors, 2008; Niemi & Nevgi, 2014).

This study had some limitations. The questionnaire appeared to be useful in measuring teachers' involvement in inquiry-based working, but it needs to be improved. The CFI value of .90 was under the value of .95, which was mentioned as acceptable by Hu and Bentler (1999). However, according to other literature, a value of CFI .90 is acceptable (Brown, 2006; Cheung & Rensvold, 2009; Lewis, 2017). Furthermore, the internal consistency in the systematic reflection in the classroom scale appeared to be rather low. This is possibly caused by the distribution of the scores in this scale; the scores were relatively high, and the variation was small, indicating that the included items might be common for most teachers. For further research using this questionnaire it is recommended to critically evaluate the items in the reflection classroom scale. This scale might be improved by focussing even more on systematic aspects in reflection, thus focussing more on aspects that may not be daily practice for all teachers (LaBoskey & Richert, 2015). Another important issue to be mentioned is that the graduates in this study were not randomly distributed over the professional and the academic programmes. Students may therefore already have differed in their inquiry-oriented attitude before the start of their studies. However, the aim of this study was not to attribute differences between the involvement in inquiry-based working of teachers from the two types of programmes to their earlier teacher education. The focus was on what graduates actually do with their acquired research competencies once they are working



as teachers in a school and which factors influence this. Furthermore, the participants in this study were graduates of 6 different regular programmes and 6 different academic programmes. We were not able, however to find elements in the curriculum of the different programmes that might contribute to the teachers' involvement in inquiry-based working.

Despite these limitations, our study provided insight into the involvement of beginning teachers in inquiry-based working. This study can be useful for schools and for teacher education programmes that want to stimulate the involvement of teachers in inquiry-based working. More and more programmes in teacher education describe themselves as 'research-based'. Preparing candidates for inquiry-based working is an aspect that many programmes aim for. The instruments in this paper try to operationalise what inquiry-based working means and may help teacher education programmes and school organisations evaluate how well they succeed in this aim. With the questionnaire we developed, we now have an instrument that enables us to investigate teachers' involvement in inquiry-based working more systematically and on a larger scale. This study is the first step in understanding how the competencies of academic teachers can be optimally used in their schools.



# CHAPTER

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# 5

# **Professional development in inquiry-based working; the experiences of graduates from academic teacher education programmes**

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## **ABSTRACT**

Research-intensive teacher education programmes aim to educate teachers to work in an inquiry-based manner. Little is known, however, about how graduates of these programmes function and develop as teachers. Graduates were followed to investigate how their inquiry-based working developed during their first years of teaching. Interviews were conducted with seven Dutch graduates and their school leaders over three subsequent years. Their involvement in inquiry-based working was found to shift from the classroom level to the school organisational level, with this shift being dependent on individual and organisational conditions. The results suggest ways to support teachers' professional development in inquiry-based working.

### **Keywords**

Research-intensive teacher education, Teachers professional development, Teacher Research, Inquiry-based Working, School culture.

## INTRODUCTION

The development of teachers during their first years is a topic of main interest. A teacher's first years of teaching are often experienced as a praxis shock or a reality shock (Dicke, Elling, Schmeck, & Leutner, 2015; Friedman, 2000; Veenman, 1984; Willegems, Consuegra, Struyven, & Engels, 2017). Teachers develop certain ideas and expectations during teacher education, but, in their first years of teaching, they are confronted with the complexity of their jobs in terms of classroom management, administration, contact with parents and becoming a member of the school team. It is therefore often difficult for teachers to teach in accordance with both their expectations and the knowledge that they have acquired during teacher education (Dicke et al., 2015; Friedman, 2000; Kelchtermans & Ballet, 2002; Willegems et al., 2017).

In the last decades, there has been an increased focus on inquiry-based working in teacher education. Teachers are expected to be able to use and conduct research to make well-informed decisions and to innovate and adapt their teaching to developments in our changing society (Munthe & Rogne, 2015; Niemi & Nevgi, 2014; Ulvik & Riese, 2016). In many countries, teacher education programmes have incorporated training on teacher research with the intention of educating teachers who are able to conduct research and apply the findings thereof (Afdal & Spernes, 2018; Davis, Clayton, & Broome, 2018).

As a result of the focus on inquiry-based working in teacher education, novice teachers will begin their careers with expectations about how they will do and use research in their jobs (Van der Wal-Maris, Beijaard, Schellings, & Geldens, 2018; Willegems et al., 2017). However, there is a lack of knowledge concerning the development of teachers in terms of inquiry-based working during their first years of teaching. Do possibilities exist for teachers to actually use and conduct research? What are the challenges they faced, and what do teachers need to further develop their skills? This study explores these issues by following seven teachers in the Netherlands who recently graduated from research-intensive teacher education programmes by investigating their development in terms of the ability to apply inquiry-based work skills.

### **Inquiry-based working**

The term inquiry-based working refers to a process of using and conducting research to evaluate and improve teaching (Uiterwijk-Luijk, 2017). In the literature, many different terms have been used to refer to this process, including self-study, data-based working, evidence-based or evidence-informed working, action research and lesson study (Chokshi & Fernandez, 2005; Cochran-Smith, 2009; LaBoskey & Richert, 2015; Nutley, Jung, & Walter, 2008; Schildkamp, Ehren, & Lai, 2012; Wohlstetter, Datnow, & Park, 2008; Zwart,

Smit, & Admiraal, 2015). Previous studies have indicated that novice teachers occasionally engage in certain elements of this type of research but do not usually conduct complete research cycles (Baan, Gaikhorst & Volman, 2018; Butler & Schnellert, 2012). It appears that, in practice, novice teachers engage in the following forms of inquiry-based working: 1) systematic reflection, 2) using research and 3) conducting research (Baan et al., 2018). Teachers mostly engage in these forms of inquiry-based work in their classrooms in response to issues that arise in their teaching. For example, teachers may consult relevant literature to obtain information about how to handle children with special needs in their classrooms. Some teachers also engage in these forms of inquiry-based working at the school level; for example, a teacher might conduct research concerning the effectiveness of a newly introduced teaching approach (Baan et al., 2018; Baan, Gaikhorst, Noordende & Volman, 2019a; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017).

### **Development of teachers in inquiry-based working**

Several studies have focussed on the experiences of graduates of research-intensive teacher education programmes during their first years of teaching (Afdal & Spernes, 2018; Davis et al., 2018; Goodnough, 2011; LaBoskey & Richert, 2015; Maaranen, 2009; Volk, 2010). These studies indicate that graduates are both competent and motivated to use and conduct research. However, novice teachers who have graduated from research-intensive programmes appear to mostly engage in reflection and using literature and less in conducting research. Moreover, these forms of inquiry-based working are mostly conducted within their own classrooms. Nevertheless, some teachers, especially those with roles in professional learning communities, have been found to be involved in forms of inquiry-based working at the school level (Baan et al., 2019a, 2018; Goodnough, 2011).

### **Professional development of novice teachers**

A considerable number of studies have focussed on the professional development of teachers in their first years (e.g. Fox & Wilson, 2015; Kelchtermans & Ballet, 2002; Louws, van Veen, Meirink, & van Driel, 2017; Menter, 2015). Novice teachers are in particular need of support and coaching related to the challenges that they will likely face during their first years of teaching (Gaikhorst, Beishuizen, Korstjens & Volman, 2014; Louws et al., 2017). The findings of previous studies may be relevant in developing an understanding of the development of novice teachers' inquiry-based working.

Menter (2015) identifies distinct phases in the professional development of novice teachers. The first two years are referred to as the *induction phase*, in which the development of teachers is solely based on adapting to the routines and approaches that are used in their schools. The development that teachers undergo during this phase is concerned with improving their teaching and deepening their understanding of the specific needs of their students and classroom management (Dicke et al., 2015).

Thereafter, from anywhere between two to five years of teaching experience, the *early professional development phase* starts, in which teachers have more opportunities to deepen their teaching. In this phase teachers can develop a more inquiry-oriented approach and deepen their theoretical understanding, for example through enrolling in a master's programme. Finally, in the *Continuing professional development phase*, teachers may assume new roles in school organisations. A teachers may specialise in a subject or assume a formal leadership role at his or her school (Menter, 2015). In such a leadership role, teachers can contribute to developments in their schools and influence their colleagues (Harris, 2015).

Although these phases are interesting in terms of understanding the professional development of teachers, the different phases should not be interpreted as being static and unchangeable: each individual teacher develops differently, and such development can be significantly influenced by his or her context (Kelchtermans & Ballet, 2002; Louws, Meirink, van Veen, & van Driel, 2017).

### **Personal and school organisational conditions influencing professional development**

The professional development of teachers appears to be related to their personal conditions on the one hand and cultural and structural conditions in the school on the other hand (Kelchtermans & Ballet, 2002; Louws, Meirink, et al., 2017). Personal conditions refer to a teacher's identity, expectations, motivation, knowledge and conceptions of good teaching. Structural conditions refer to both material aspects such as workload and schedules and to organisational aspects such as a teacher's position or role in his or her team. Cultural conditions refer to a shared school culture and vision and the existence of a culture of collective decision-making and collaboration (Kelchtermans & Ballet, 2002; Louws, Meirink, et al., 2017). Teachers, especially in their first years, report to find it difficult to teach in accordance with their own conceptions, knowledge and beliefs. The terms 'praxis shock' or 'reality shock' are often used to describe the difficulties that novice teachers (especially in the induction phase) experience in applying their theoretical knowledge in a practical context (Dicke et al., 2015; Veenman, 1984; Willegems et al., 2017). The need to take full responsibility for their classes, their first experience of classroom management and a lack of time often cause teachers to engage in practices that clash with their understanding of good teaching (Kelchtermans & Ballet, 2002).

In addition to these issues, teachers also join school organisations that have their own traditions, habits and relationships. Cultural and structural conditions can support a teacher's own conceptions when there is a shared vision concerning teaching or when a structure that corresponds with his or her values exists. In contrast, there can also be



contradictions between a teacher's conceptions, values and needs and those of his or her school organisation. It is difficult for teachers to develop their abilities when there is a poor fit between their personal needs, knowledge and values and those of the school organisation to which they belong (Kelchtermans, 2014; Kelchtermans & Ballet, 2002; Louws, Meirink, et al., 2017; Willegems et al., 2017).

It may be relevant to consider these personal and school organisational conditions when attempting to understand teachers' development in inquiry-based working. With regard to personal conditions, teachers' involvement in inquiry-based working appears to be related to their expectations and motivation (Author et al., 2019; Davis et al., 2018). With regard to structural and cultural conditions, previous research has indicated that school culture, ideas about inquiry-based working held by members of a team, the role or formal position of a teacher, the school leader and the existence of a structure intended to support inquiry-based working (e.g., research groups) affect teachers' involvement in inquiry-based working (Author et al., 2018; 2019; Davis et al., 2018; Deluca, Bolden, & Chan, 2017; Willegems et al., 2017). Teaching is the main task in a school, and school organisations are often focussed on daily practice. Research is thus not always valued as part of teaching but is often considered to distract from the essential task of teaching.

### **Contextual background**

For this study, seven academic teachers were followed in their first years as teachers. In this context, the term academic teachers refers to graduates of research-intensive programmes which have recently been developed in several universities in the Netherlands. Since 2008, universities have offered academic primary teacher education programmes. Conventional professionally oriented programmes in the Netherlands are bachelor's degree programmes, which are offered by institutes for higher professional education (Van der Wal-Maris et al., 2018; van der Linden, Bakx, Ros, Beijaard, & van den Bergh, 2015). These institutes have a more practical orientation than universities, and the attention they pay to research is limited. The aim of academic programmes is to encourage teachers to develop inquiring attitudes, to incorporate research findings into their own teaching practices and schools and to conduct their own research (Snoek, et al., 2017; Van der Wal-Maris et al., 2018). Academically educated teachers are thus expected to be able to work in an inquiry-based manner and to thus contribute to the improvement of the quality of education in both their own classrooms and within their school organisations (Van der Wal-Maris et al. 2018).

### **Present study**

This study fills a gap in the research literature by investigating how teachers who are specifically prepared for using and conducting research develop in terms of inquiry-based working in their first years of teaching and which opportunities schools (can) create for

those teachers to do so. We distinguish between three forms of inquiry-based working (systematic reflection, using research and conducting research) at the levels of both the classroom and the school. The following research questions were formulated:

1. How does the inquiry-based working of academically educated teachers develop in their first years of teaching?
2. What do teachers need in order to develop their inquiry-based working?

## METHOD

To understand the development of teachers in their first years of teaching, a qualitative longitudinal approach, using semi-structured interviews with seven teachers and their school leaders, was chosen. The interviews were conducted in 2016, 2017 and 2018.

### Participants

The characteristics of the teachers who participated in the study are presented in Table 1. They were all graduates of one of three academic teacher education programmes in the Netherlands. The teachers were selected by purposeful sampling. 43 graduates and their respective school leaders were approached to participate in this study. Thirteen graduates were willing to participate. Those who taught for at least two days a week and who were still working at the same school after three years were selected. All teachers and their school leaders received an information letter describing the purpose of this research and signed it to indicate their consent to participate.

**Table 1.** Characteristics of the teachers

Name	Sex	Age	University	Experience*
Joanne	F	26	1	4 <sup>th</sup> year
Peter	M	27	1	4 <sup>th</sup> year
Steve	M	25	2	1 <sup>st</sup> year
Mark	M	24	2	2 <sup>nd</sup> year
Marie	F	24	2	2 <sup>nd</sup> year
Suzie	F	24	3	2 <sup>nd</sup> year
Jill	F	24	3	2 <sup>nd</sup> year

\*Experience at the time of the first interview.

### Data collection and instruments

Semi-structured interviews were conducted with both the teachers and their school leaders. These interviews were held on a one-to-one basis and took place in the schools of the participants. The interview questions focused on the teachers' involvement in inquiry-based working. A distinction was made among three forms of inquiry-based

working: 1) systematic reflection, 2) using research and 3) conducting research (Authors et al. 2018). Furthermore, questions concerning personal conditions, motivation and competences for inquiry-based working, as well as cultural and structural conditions in the teachers' schools, were included (Kelchtermans & Ballet, 2002). Examples of questions are presented in Table 2.

**Table 2.** Examples of interview questions

<b>Topic</b>	<b>Examples of questions</b>
<b>Questions related to the teachers' development in inquiry-based working</b>	Do you have the impression that you have been able to further develop your reflection skills since you graduated?
<b>Questions related to cultural conditions</b>	Can you describe the research culture at this school?
<b>Questions related to structural conditions</b>	(How) is time made available for conducting research, investigating relevant literature and/or engaging in reflection?
<b>Questions related to personal conditions</b>	Do you think you have sufficient knowledge and skills to successfully engage in inquiry-based working?

The interviews with the school leaders featured similar questions and focused on the school leaders' perceptions of the academic teachers' development in inquiry-based working and the ways in which these teachers' research expertise was used in the school. Prior to the interviews, two pilot interviews were conducted with teachers who were familiar with inquiry-based working in schools. These teachers provided useful feedback from the perspective of practitioners concerning the interview guide and the language used. The duration of the final interviews was approximately 45 minutes (teachers) and 30 minutes (school leaders).

### **Data analyses**

The 'content analysis' method as described by Miles and Huberman (1994) was used to analyse the interviews. As a first step, transcripts were made of the interviews. The authors then created a coding scheme, based on the literature, including the different forms and levels of inquiry-based working and personal, structural and cultural conditions. The first author used program Atlas.ti (version 7) to code the interviews, and matrices were created for each teacher in which the relevant fragments from both the teacher and the school leader interviews were organised. To enable a cross-case analysis, a matrix was created that included fragments from all interviews, grouped in such a way that each column contained fragments referring to a particular period in teachers' careers (see table 3). Since the teachers' differed in their years of teaching

experience and in later interviews sometimes comments were made concerning earlier years, this enabled us to construct a chronology. As a final step the cross-case analysis was performed, identifying patterns in the teachers' development in terms of inquiry-based working over the years and differences in the conditions that were mentioned.

**Table 3.** Example of a cross-case matrix

	Quotes concerning the first year	Quotes concerning the second year	Quotes concerning the third to sixth years
<b>Code: Development in reflection</b>	In the first year it was just following the programme of the day. Then you don't get around to it (reflection). Then it is just survival.	I think it is now a bit easier to evaluate. I have noticed that I can now see what a child needs more quickly.	I am less concerned with what is going on only in the classroom and now focus more on the school as a whole.
<b>Code: Structural conditions</b>	I think I'll first need to gain a position in the school where I am able to do that (inquiry-based working). And a job description that allows time to do so.	But you can see that it just takes a lot of time before something gets off the ground. Time is a hindrance.	Time, that is positive, but with the other colleagues, it is also negative, because I have a lot of time, but others don't have this time.

### Trustworthiness and reliability

The trustworthiness of the data was enhanced via several means: The interviews were recorded and transcribed verbatim to prevent interpretation bias. All teachers received the transcripts of their interviews for member check. None of the teachers or school leaders suggested or requested any adjustments. Furthermore, the coding of a sample of 10% of the interviews was evaluated by the second author. After discussion, there was complete agreement concerning the coding. Finally, the cross-case analyses were discussed by the research team. Direct quotes from the original interviews were included in the results section to illustrate and support the findings.

## RESULTS

### 1: How do academically educated teachers develop in inquiry-based working in their first years of teaching?

#### *Teachers' development in systematic reflection at the level of the classroom*

All teachers mentioned that, during their first years, their focus was on surviving as educators and some even said that they felt relieved when they had completed each day's programme. The teachers mainly reflected on the routines in their classes and

schools, and most of them adopted the same routines as their colleagues. In the second year, teachers began to reflect on how they might improve their own teaching as Suzie explained:

*For example, we have three groups of the same age and we tend to do everything in a similar way last year I just followed my colleagues. [...] But now I look more at my own class, like 'it's too hard for my class so I'm going to do another activity with them'. Simply much more aware, also in terms of differentiation. Last year, I just rolled through a bit about what the previous teacher had set up, and now I actually set it all up myself.*

Three teachers stated that they felt that they had more space for in-depth reflection after their first two or three years. This made them more aware of the needs of individual children, as described by Marie:

*In the first year, I was mostly swimming and surviving, to be honest. So then you follow the lesson programme, and you are happy that you made it. Last year, I conducted a deeper analysis to identify the areas in which children make mistakes and why. This year, I am going deeper into it. So my focus is on which specific part they fall out.*

Furthermore, they became more open concerning their reflections and felt more confident to use feedback of colleagues, as Jill mentioned:

*In terms of reflection, there was nothing in the first year, only if the teacher coach asked for it. That was twice in the entire period, I think. Last year, it was a bit there, but I kept a lot to myself too. I did discuss things with colleagues but not the reflections about myself. I was talking more about how I was going to do things, not about how I had done things and whether they were good and how I could improve them.*

However, four other teachers reported that they underwent a different type of development: They mentioned a decreased tendency to engage in reflection during their third or fourth years. They stated that, due to their experience, their teaching became more routine. These teachers felt more confident about their teaching and did not feel a need to change or to reflect on it, as Suzie explained:

*Well, on the one hand, I think I reflected more last year than I do now, because it was newer then. [...] Last year, I was finding out more, and I had to try new things, and I had to reflect on whether or not they worked. In that regard, it is now more based on routines.*

### *Teachers' development in systematic reflection at the school level*

During their first two years, teachers seldom said to reflect on issues related to their schools. However, the school leaders noticed differences in academically educated teachers' reflections compared to those of regular educated teachers, as explained by the school leader of Jill with regard to her second year:

*What I do notice is that she [the academic teacher] looks very critically at everything, and that is quite special for a starting teacher. That is what I mostly see right now; she is critically analysing. [...] She is quick to identify issues both in the classroom and in the school organisation, and she is not afraid to give her opinion. She is a full-fledged partner.*

After their first two years, several teachers tended to engage in reflection at the school level. For example, Steve made the following observation regarding his third year: *'My ability to reflect at school level is developing because I have more ownership and I feel more involved since the end of the previous school year'*.

### *Using research at the level of the classroom*

The teachers' development in terms of using research was comparable to the development in systematic reflection. In their first year, teachers were focused on surviving. They indicated that they did not have enough time to use research to improve their teaching. Most teachers mentioned that they had more time for this in their second year. They mostly consulted literature concerning problems that they had experienced in their teaching (e.g. related to behaviour, reading or math), as Suzie explained:

*In the first year, I didn't really do much with it; it was more about survival then. I did search for literature about something from time to time when it was really needed, but then I thought, 'I could read about everything, but I just have to experience it'. At this moment [in her second year], I am using literature focussed on behaviour, but I also have some books about the process of starting to read for example. I only read that book for one evening, but I have another text on behaviour that I read every week.*

Four teachers reported that they were basing their teaching on literature less frequently after two or three years. Marie explained that this decrease was related to her experience:

*Recently, I no longer frequently consult literature or my study books. This is much less than last year. My teaching is now based on my experience in practice, what I noticed last year and what worked. If it is still based on literature? I don't know anymore. Last year, I felt the need to search for literature to see if what I was doing was right. Now, I know whether it worked or not, so I don't have to search anymore.*

### *Using research at the school level*

Most teachers, especially in their second or third years, mainly focussed on using research in their own classes. Only two teachers consulted literature related to the school level. However, after four years, all teachers reported using research at the school level. The school leader of Peter also described how this teacher shares findings from the literature with his colleagues:

*Peter always comes with articles, like 'Look, I found this article that mentions this'. That is really Peter, nobody else does that. Another teacher will also say that he has read something about a topic, but Peter does not show one study, but three studies. He never just mentions something without the support of literature; that is very special. He also sends it to colleagues.*

However, both Peter and Steve noted that it was difficult to motivate their colleagues to apply the literature findings that they attempted to share. Peter became less motivated to share literature because his colleagues did not apply the findings that he shared:

*I think that, in the first year, I was more enthusiastic about sharing things because, at that time, I had not experienced that it was very difficult to share literature. I think I have become a little less motivated to share things because it is not responded to in a way that motivates me.*

In contrast, Steve noticed that he had come to promote and share literature findings more often over the years. He mentioned that he was capable of finding literature related to the subject; he also presented it in the teacher research group at his school.

*What I am doing now is, for a meeting of the research group, I send some literature in advance. The literature then returns in the meeting, so I make it more important in the group. I really didn't do that last year. Then, it was more: 'Has anyone found something? No? Okay, then we will continue'. Now, I have noticed that teachers find it really hard to find something relevant. I can do that a little better. [...] In a certain moment, of course, it is nice if teachers themselves come up with things. Now, I focus on merely showing what exists and how it can be used.*

### *Conducting research at the level of the classroom*

Most teachers did not conduct research in their classrooms over the years. Only two teachers provided some examples of conducting research in the classroom. Peter provided the following example:

*The children complete a questionnaire about their social well-being in the classroom. They indicate who is close by, who is far away, who is sometimes kicked and who sometimes hits other students, etc. With that tool, you can set a number of conditions about how the members of the class should be grouped.*

### *Conducting research at the school level*

In contrast with conducting research in their class, most of the teachers had conducted research at the level of their respective school organisations. Two teachers had already become involved in research at the school level during their first two years as teachers. After having acquired three years of experience, six teachers had begun conducting research in their school organisations. Most of the teachers reported that they had engaged in research projects during a period of time. Marie, for example, conducted research focussed on math education and the social well-being of children in her school, and Suzie conducted research aimed at vocabulary development. Joanne's research was part of a master's course in special education needs and focussed on the development of children's reading processes. Two other teachers were involved in several research projects at their schools. Marie's school leader described her development as follows:

*Last year, she really showed her added value in data-oriented research and organizing that. Most teachers don't do that. [...] She considers issues such as where we can obtain the right data, so that it is evidence-based. We have an assumption, but how can we check whether that is correct? She really has a role in this because she has learned that one must conduct a study based on three points of measurement to obtain valid results.*

However, Marie herself mentioned that the research was not further used in the school and that she was not motivated to become involved in future research projects at her school as a result.

*I received and analysed the data and also wrote a report about it, which I have shared. I was not completely satisfied yet, but, in the end, it was not used very extensively. So I thought that was a waste of my time and energy. That is perhaps why I am less involved in it now.*



In contrast, Steve developed in terms of employing research methods that were not included in his teacher education programme but were needed to find answers to questions that arose in his school. He referred specifically to his development in terms of conducting qualitative research:

*The research that I did myself, when I did the teacher education programme, were very quantitative. Now, I am focussing on qualitative research involving interviews, so I am very curious. In March, when the research group comes together again, we will code it together. I have never done that myself, so I am very curious about that. I am actually developing into qualitative research now.*

## **2. What do teachers need to develop in inquiry-based working at the level of their classrooms and the school level?**

The analysis of the interviews revealed that there were differences in what teachers needed to develop their inquiry-based working in their first and subsequent years. Their needs also differed with regard to their development in inquiry-based working at the class and school levels.

### *Teachers' need with regard to development of their inquiry-based working at the classroom level*

The teachers mentioned that, in their first two years, they needed enough freedom to experiment with different approaches and to evaluate these approaches using, for example, test results or observational data. When teachers wanted to test different approaches or materials, they needed a supportive school leader. As Marie explained, a relative lack of restrictions with regard to how teachers should approach their teaching is important:

*Especially the freedom to do it. So, if you ask 'can I do this', they say 'yes, go ahead'. [...] That they don't say 'What are you doing?' So, especially from the management, it is important to exhibit an attitude that confirms what you want to do.*

In their first two years, teachers made use of the literature and experiences provided by their teacher education programmes. After two or three years, most teachers needed new input to develop their teaching further and to find new challenges in teaching. In particular, teachers who felt confident in their teaching skills needed new challenges outside of their classrooms to further reflect on their teaching. Steve, for example, mentioned that, after two years, his involvement in research groups helped him to reflect on his teaching: *'I think that, through those research groups, you always learn to think about your own education'*. Joanne had enrolled in a course of study in her fourth year, which provided her with inspiration:

*After graduation, it was just a bit of superficial evaluation of what I had done and what I wanted to do differently. Since I did my master's, my reflection has become more relevant, because I am expected to look much deeper than just what happened.*

Through engaging in activities within their schools (e.g. participating in a research group) or outside of the school context (e.g. enrolling in additional courses), teachers are faced with new ideas, new literature or new approaches, which can inspire them to continue improving their teaching.

### *Teachers' needs with regard to the development of their inquiry-based working at the school level*

In their first years, most of the teachers mentioned structural aspects as prerequisites to be able to develop in terms of inquiry-based working at the school level. The teachers described, for example, the importance of a formal role involving inquiry-based work at their schools, sufficient time, (external) support and the organisation of research groups. Steve, for instance, noted that *'We now have three research groups. We also have someone from the university who supports us. [...] Because I had time for it, I better organise these groups.* Teachers who did not have a formal role in their school organisations mentioned that such a role would have given them more opportunities to make use of and develop their expertise with regard to inquiry-based working. Peter, for example, explained what he would consider an ideal situation:

*If, for example, I would teach for four days a week and for one day I would be doing research. In such a position I could also join the management team. [...] If I would be asked with innovations and changes in the school what my experiences are or what I know about it from research. So especially the recognition and also that position towards my colleagues.*

There were significant differences in the years in which teachers first took on such a role and how these roles were characterised. Marie and Steve already started to participate in research groups at their schools during their second years, and Steve's role within the school was formally described as 'research coordinator'. In this role, it was his responsibility to organise research projects and to motivate colleagues to engage in inquiry-based working. Mark, Peter and Suzie started conducting research in a professional learning community after their third years. They participated in such a community but did not assume leadership roles. Joanne began to function as a teacher coach at her school in her fourth year, whereas Jill did not play such a role at all in her school organisation.

However, not all teachers felt comfortable playing a role related to inquiry-based working at the school level. For most teachers, self-efficacy with regard to their teaching was a prerequisite for their development in inquiry-based working at the school level. Teachers wanted to feel comfortable in their teaching before focusing on broader issues. For example, Joanne stated that *'Right now, I see myself primarily as a teacher, and I want to feel competent before I continue'*. In addition, the specific context of a school was found to influence teachers' development in inquiry-based working at the school level. Mark's school leader explained that, due to the fact that many members of his school's student population demonstrate behavioural issues, it was difficult for Mark to focus on issues other than those that arose while attempting to teach his class:

*The problem at our school is that we have a very difficult population. Perhaps if you saw Mark at another school, with a less difficult population, he could get or take more chances, time or space that he doesn't have in this situation.*

Teachers began to mention cultural conditions more frequently than structural conditions after having acquired three to four years' of experience. After having taught for a few years, most of the interviewed teachers stated that they had gained some experience in inquiry-based working in their school organisations and stated that their schools were important for their development. Four teachers mentioned school culture as having a negative influence on their ability to engage in inquiry-based work. Marie, for example, noted the following:

*I noticed that, with the colleagues I worked with in the same age group, they were very much like the old-fashioned. And that it was very difficult to do something innovative. 'Yes but I have been doing this for 20 years', was often the reaction.*

These teachers mentioned that their school cultures were not open to new developments or innovative approaches. Therefore, it was difficult for them to develop in terms of their inquiry-based working. In particular, many teachers mentioned that, during teacher education, they had believed that they would have the opportunity to apply their competences in terms of inquiry-based working to improve the quality of education in the schools in which they would teach. These teachers found it frustrating when their school cultures were not open to inquiry-based working. As Suzie explained,

*During my study, I always thought when I become a teacher, I will see what can be improved and then look at how I can improve it. But, now, I think nobody is waiting for that, at least not at this school. Then why would I do that? So then I just do it in my own class.*

Some school leaders also mentioned that there was a culture in which a teacher's years of experience were important for his or her development in inquiry-based working at the school level. The importance of teaching experience was mentioned frequently, particularly in schools where the majority of teachers had already been working for several years. Suzie's school leader expressed this as follows: *'She thinks she is just a little too young for that, you can do that if you have ten years of experience, then you also have something to say I think'*. In these schools, it was difficult for younger teachers to feel competent enough to engage in inquiry-based working at the level of their respective school organisations.

Other teachers mentioned that there was a positive culture with regard to inquiry-based working and that there were opportunities for innovation at their schools. In particular, Steve was very positive about the culture at his school: *'Concerning the research culture, everyone is very inquisitive; everyone is motivated. Everyone wants to move forward and wants to develop'*. His school leaders were also aware of his competences and were able to provide him with opportunities to use and further develop these competences:

*You can notice that he is smart. You can see that in his teaching and very much in his dealings with everything that he encounters in his teaching. In his role as a research coordinator, you see it because he is working on different levels, in practice, with all the accompanying phenomena. But, at the same time, he also participates in a larger meta research organised by the university, and then he brings this knowledge to the research groups in the school. He also needs that to be able to focus on different levels. He is very versatile. He needs not only to be challenged in his own school but also in a wider context.*

With regard to personal conditions, the teachers also mentioned their own competences in collaborating in inquiry-based working. Four teachers mentioned that they had not learned how to motivate other teachers in inquiry-based working. For example, Peter stated the following: *'Perhaps I miss the skills of change management. At least, such a role (a formal position in inquiry-based working in the school), than it can also grow more. Either I'm not good at it or it just doesn't work. I might have too little persuasion or too few supporters'*.

Furthermore, three teachers who reported that their schools had cultures that were open to inquiry-based working, noted that they had the impression that they lacked essential competences. During their teacher education programmes they learned how to conduct research but not how to involve a school team, how to collaborate in inquiry-based working and how to share literature with their colleagues. Most of these teachers received support within their schools in developing these competences, for example from

their school leaders, or otherwise mentioned finding external sources of support. For example, Joanne mentioned that, in her first years, she wanted to make changes over a short period of time but learned to be more patient:

*Well, sometimes, my own ambition. I sometimes find it very difficult to wait. I want to be right, so I find it hard to admit that I am wrong or to think 'ok, I know I am right, but that is not yet coming, so I have to wait for a while and come back to it at a different time.'*

## CONCLUSION AND DISCUSSION

A considerable amount of previous research has focussed on the professional development of teachers during their first years of teaching (Kelchtermans & Ballet, 2002; Louws, van Veen, et al., 2017; Menter, 2015; Pithouse, Mitchell, & Weber, 2009; Willegems, Consuegra, Struyven, & Engels, 2018). However, professional development in inquiry-based working has received little attention. This study aims to contribute to the existing knowledge by providing insights into the development in inquiry-based working of teachers who graduated from research-intensive teacher education programmes.

Concerning the first research question (how do academically educated teachers develop in inquiry-based working in the longer term), this study showed that, during their first two years, the teachers interviewed focused mainly on survival in their classes. Thereafter, the focus of most of the teachers shifted to reflection and applying findings from the literature. However, after two years, when most teachers felt more confident in their teaching, there was a decrease in reflection and the use of literature in their classes. Teachers simultaneously became more focussed on inquiry-based working at the school level.

With regard to the second research question (what do teachers need to develop in inquiry-based working at the level of their classrooms and the school level?), this study showed that, in their first years, it was important for teachers to have enough freedom to experiment in their classrooms. After gaining two years of experience, teachers needed new ideas and new challenges, which often arose in activities outside of their own classrooms, to further develop their ability to engage in inquiry-based working in their classrooms.

The teachers' development in inquiry-based working at the school organisation level was found to be related to a combination of individual and organisational aspects. It appears to be important for a teacher to have a school leader who is aware of the teacher's

competences and motivation for engaging in inquiry-based working. In their first two years, most teachers mentioned conditions such as a role or function related to inquiry-based working and sufficient time as prerequisites for engaging in inquiry-based working at the school level. After two years of experience, the teachers mentioned an open and innovative school culture wherein inquiry-based working is valued as being important for their development. Furthermore, they mentioned that they had experienced a lack of competences that are needed to involve colleagues in inquiry-based working and collaborate with them. Teacher education programmes obviously pay little attention to the development of such competences.

The results of previous studies that distinguished phases in professional development (Louws, van Veen et al., 2017; Menter, 2015) were confirmed in this study. In their first years, the interviewed teachers were focussed on routines and surviving their daily classroom practice. It was difficult for them to develop their ability to engage in inquiry-based working due to work pressure, lack of time and their primary focus on classroom management. However, the development of the novice academic teachers in this study also seemed to proceed in ways that differ from those that have been previously established for novice teachers. First, they seemed to develop *faster* than the beginning teachers considered in the studies conducted by Menter (2015) and Louws van Veen et al. (2017). For example, six of the seven academic teachers considered in the present study began to play a role in which they engaged in inquiry-based working in the school organisation after two, three or four years of teaching experience; this is earlier than what was found in other studies, in which novice teachers reported to play such a role after about five to seven years of experience (Louws, van Veen, et al., 2017; Menter, 2015).

The results also indicate that the interviewed academic teachers experienced a praxis shock (Dicke et al., 2015; Veenman, 1984; Willegems et al., 2017) in their first years. The teachers in this study were educated in the competences required for inquiry-based working and were motivated to apply these in practice. This is similar to what was found by Van der Wal-Maris (2012) and what we also found in an earlier study (Author et al., 2019). During teacher education, several teachers developed the impression that they would work as teacher-researchers in schools and would be able to use their competences in inquiry-based working to both improve their own teaching and their school organisations. However, after three years, some teachers became demotivated as they did not perceive their school cultures as supportive of inquiry-based working. The praxis shock experienced by these teachers did not concern a confrontation with the daily challenges of teaching, but was also related to a clash between their professional identities as teacher-researchers and their actual working situations, in which they were not able to use and further develop their competences related to inquiry-based working. Some of the teachers' descriptions of their school cultures were reminiscent of what has

been described by Kardos (2001) as a 'veteran-oriented professional culture' in which there is a majority of experienced teachers who do not work together and do not feel the need to discuss their work as teachers.

However, other academic teachers were positive about their schools' cultures. When these teachers felt comfortable in their teaching, they were able to develop in roles in their respective school organisations in which they could work in an inquiry-based manner. In such roles, they were able and motivated to develop their competences as a teacher leader and in turn encourage their colleagues to engage in inquiry-based working as mentioned by Harris (2015). In this way, these teachers appeared to have had an important influence on the creation of a culture in their respective schools that supports inquiry-based working. Louws van Veen et al. (2017) identified different needs in terms of the professional development of teachers during different stages of their careers; according to these authors, it is important that schools acknowledge and support teachers with specific needs. This study showed that academic teachers have specific needs in relation to inquiry-based working during the early stages of their careers; however, school organisations in the Netherlands do not always fulfil these needs appropriately. This is understandable, as academically educated teachers, who are specially educated to perform and use research in their schools, are a relatively new phenomenon. This study provides insights into how schools can stimulate their professional development in inquiry-based working. This is important to keep academic teachers motivated to remain in the teaching profession.

This study has some limitations. First, the teachers interviewed were all beginning their teaching careers, but there was variety in terms of their experience. One teacher had just started at the moment of the first interview, whereas another teacher was in his fourth year. However, we approached this by asking all teachers to reflect on their experiences in the first years, to be able to compare their experiences. Another limitation is that we were not able to conduct interviews with all school leaders at each measurement period. With three of the school leaders only two interviews were conducted. Therefore, we might have missed some information concerning these teachers' development. Finally, while the small-scale design made it possible to obtain detailed insights into the teachers' development in terms of inquiry-based working, it is not possible to generalize the results. In future research on the development of the inquiry-based working of (academic) teachers, a larger number of teachers should be involved.

This study has implications for (1) teacher education programmes, (2) school organisations and (3) educational policy. First, it suggests that research-intensive teacher education programmes should pay more attention to the development of what Kelchtermans and Ballet (2002) call students' political efficacy. It is important that teachers not only

develop inquiry skills but also learn how they can apply these skills in the context of a school organisation. This implies learning how to involve other teachers in inquiry-based working. Examples of teachers who play a leading role in inquiry-based working in a school and discussions about the challenges they may face themselves could be a useful additions to the curricula of teacher education programmes.

Second, it is important that school leaders are aware of the specific needs of novice academic teachers. Teachers who are educated with the competences to reflect on issues related to a school organisation and who are motivated to do so should not have to focus on their own classes for five years or wait until their teaching skills have reached a certain level. They should be allowed and invited to use their competences to improve the teaching in their school organisation sooner.

Finally, there are implications for educational policy. Can we expect beginning academic teachers to become involved in inquiry-based working in their first years of teaching, or are we expecting too much of these teachers? If these teachers are educated to work as teacher-researchers and being a beginning teacher is so overwhelming that many teachers are not able to apply their competences, they may lose interest in inquiry-based working by the time they feel confident in their teaching. Therefore, a structure in which academic teachers can use their competences should be created in schools. It is therefore suggested that schools reduce the responsibilities of beginning teachers and provide them with time to reflect on their teaching, use literature and conduct research to make well-informed decisions concerning their own teaching and to contribute to developments in their school organisations.



# CHAPTER

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# 6

## **General conclusion and discussion**

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The contribution of academic teachers to inquiry-based working in primary schools

## INTRODUCTION

Inquiry-based working refers to the involvement of teachers in using and conducting research. Inquiry-based working can contribute to the quality of education, it can help teachers to reflect on and improve both their own teaching and the education provided by their schools (Cochran-Smith & Lytle, 2009; Cordingley, 2015; Uiterwijk-Luijk, Krüger, Zijlstra, & Volman, 2016). Teacher education institutes in several countries have shifted to a focus on inquiry-based working in academic programmes over the past few years (Darling-Hammond, 2017; Menter, 2015). In 2008, academic teacher education programmes were introduced in the Netherlands. Student teachers who enrol in these programmes are encouraged to develop inquiring attitudes and are taught how to use and conduct research. It is expected that graduates of these programmes will use their inquiring attitudes and their research expertise once they are employed as a teacher in a school. However, little is known about the actual involvement of Dutch academic teachers in inquiry-based working and the factors that determine this involvement. The main purpose of this study was therefore to investigate to what extent and how academically educated teachers contribute to inquiry-based working in their own classes and schools and how such a contribution may be encouraged.

## SUMMARY OF THE MAIN FINDINGS AND CONCLUSIONS

The results of the four studies presented in this dissertation have each contributed to the abovementioned purpose in their own manner. Chapter 2 focussed on differences in the inquiring attitudes of student teachers enrolled in academic and regular programmes. Chapter 3 explored via a qualitative study whether and how the inquiring attitudes of novice academic teachers became apparent in their involvement in inquiry-based working. In addition, this chapter explored factors that might influence their involvement in inquiry-based working. Chapter 4 investigated the involvement of academic teachers in inquiry-based working and factors influencing this involvement on a larger scale in the form of a quantitative study. Furthermore, a comparison was made between academic and regular teachers. Chapter 5 investigated the development of beginning academic teachers in terms of inquiry-based working by conducting interviews in three consecutive years.

### **Stimulating teachers' inquiring attitudes in academic and professional teacher education programmes**

The first study, presented in Chapter 2, focussed on the following research questions: *1) to what extent and how does the inquiring attitude of student teachers who followed an academic or professional curriculum in teacher education differ?* and *2) how do*

*these differences reflect the way in which research was addressed in the academic or professional curriculum?* Different research methods were employed to answer these questions. A questionnaire was used to measure student teachers' inquiring attitudes. The questionnaire was completed by 230 student teachers enrolled in regular teacher education programmes and 30 student teachers from an academic programme. Furthermore, a curriculum analysis was conducted to investigate how research was integrated into the curricula of both academic and regular (professionally oriented) programmes. In addition, interviews were conducted to obtain more in-depth knowledge concerning student teachers' perceptions of the different programmes and their motivations for engaging in inquiry-based working.

The curriculum analysis revealed that teacher research was integrated into both the academic and the regular programmes. However, in the academic programme, the number of courses involving (teacher) research was higher, and the variety of forms of research addressed was wider. Despite this variety, the main focus in the academic programme was on quantitative research, whereas qualitative research was emphasised more in the regular programmes. Another difference was that, in the academic programme, courses with a focus on research were offered throughout the entire course of study, whereas, in most regular programmes, such courses only appeared in the third and fourth years. The interview results suggested that students were more positive about the quality of research in the academic programme, although they thought that the regular programmes placed more of an emphasis on practice.

The results of the questionnaire showed that the academic student teachers were more likely to exhibit an inquiring attitude, particularly regarding the aspect of 'being critical', compared to the student teachers enrolled in the regular programmes. During the interviews, student teachers critically reflected on their classroom experiences and indicated a willingness to consider alternative solutions to problems they had identified. Furthermore, the interviews revealed that student teachers who were enrolled in the academic programme were willing to use relevant literature to evaluate their practice and intended to conduct research in their classrooms after graduation.

Although the design of this study did not allow conclusions concerning relations between characteristics of the programmes and student outcomes, the strong focus on research in the academic programme may have contributed to the development of an inquiring attitude on the part of students enrolled in this programme.

### **The involvement of academically educated teachers in inquiry-based working: a qualitative study**

Chapter 3 reported on the involvement of graduates of academic programmes in inquiry-based working in their first years as teachers. This chapter presented the results of the first round of interviews with 10 graduates and their school leaders and observations of team meetings. The research questions investigated were as follows: 1) *to what extent and how are academically educated teachers involved in inquiry-based work in their initial years as teachers?* and 2) *what are the factors that promote or hinder the involvement of novice academically educated teachers in inquiry-based working?*

The interviews and observations revealed that most of the teachers were involved in certain aspects of research. Based on the data, three forms of inquiry-based working could be identified: systematic reflection, using research and conducting research. 1) *Systematic reflection*: all teachers were involved in systematic reflection. For example, they observed and evaluated lessons and asked themselves critical questions to improve their teaching. School leaders noticed a critical and analytical attitude in the reflections of academic teachers. Furthermore, some school leaders mentioned the capacity of the academic teachers to reflect on issues related to the school level. 2) *Using literature*: most teachers used literature to inform themselves about, for example, the behavioural problems exhibited by children in their own classes or about the effectiveness of teaching methods that had been introduced in their school organisations. However, only a minority of the school leaders had noticed that these teachers were basing their teaching on findings from literature. 3) *Conducting research*: a few teachers were involved in research projects at the level of their school organisations. These teachers mentioned being involved in aspects of the research process and using the outcomes to improve the education in their schools. Overall, academic teachers were mainly involved in inquiry-based working in their own class and less at the level of the school organisation.

Concerning the second research question, the interviews and observations revealed several factors that were related to teachers' involvement in inquiry-based working. Most teachers mentioned ownership (the freedom to make their own choices) as an important factor. Furthermore, it appeared that teachers with a formal role or function related to inquiry-based working were more involved in inquiry-based working, especially in conducting research at the level of the school organisation.

### **The involvement in inquiry-based working of graduates form academic versus practically oriented teacher education programmes**

The aim of the third study (Chapter 4) was to investigate and compare the involvement in inquiry-based working of academic graduates and graduates of regular programmes in a quantitative manner. A questionnaire was developed to measure involvement in

inquiry-based working and factors influencing this involvement. This questionnaire was completed by 113 regular teachers and 89 academic teachers. A factor analysis helped to distinguish six ways of inquiry-based working: systematic reflection, using research and conducting research, each either at the level of the classroom or at the level of the school organisation. Three research questions were answered using the data collected via this questionnaire: 1) *To what extent are academic and regular teachers involved in inquiry-based working, and what are the differences between these groups of teachers?*; 2) *How do academic and regular teachers rate the presence of factors that may influence inquiry-based working, and what are the differences between these groups of teachers?*; and 3) *What are the factors influencing the involvement of academic and regular teachers in inquiry-based working?* To answer the first and second research questions, two multivariate analyses of variance were performed to compare 1) academic and regular teachers' involvement in inquiry-based working and 2) academic and regular teachers' perceptions of individual and school factors related to inquiry-based working. Regression analyses were used to answer the third question. For each form of inquiry-based working, a regression analysis was separately conducted for academic and regular teachers.

The results showed that graduates of both programmes were involved in systematic reflection and in using research, but they conducted research less frequently. Academic teachers appeared to be more involved in using research in the classroom. On the other scales, no differences were found between academic and regular teachers. There were several differences in the perceptions of the academic and regular teachers concerning factors related to inquiry-based working. Academic teachers were less positive than the regular teachers about organisational factors such as the amount of time available for conducting research, team motivation and support. In contrast, academic teacher rated their own motivation and competences related to inquiry-based working higher than did regular teachers. The results of the regression analysis revealed that some factors were specifically related to the involvement in inquiry-based working of academic teachers, whereas other factors were related to the inquiry-based working of regular teachers. For regular teachers, for example, years of experience appeared to be related to their involvement in several forms of inquiry-based working. For the academic teachers, a role in a professional learning community was found to have a positive effect on their involvement in inquiry-based working. Such a role was not only related to using and conducting research at the level of their school organisations but also to systematic reflection on their own teaching.

### **Professional development in inquiry-based working; the experiences of graduates from academic teacher education programmes**

We were not only interested in the ability of teachers to use their research competences but also in whether they were able to develop further in inquiry-based working. Beginning teachers cannot be expected to be able to fully work in an inquiry-based way immediately after graduation. Similarly to how beginning teachers develop their pedagogical and teaching competences, we expected that academic teachers would also develop in terms of inquiry-based working. A longitudinal approach was adopted to investigate this development. Chapter 5 presented the results of interviews conducted with seven academic teachers and their school leaders in three subsequent years. The research questions were 1) *how does the inquiry-based working of academically educated teachers develop in their first years of teaching?* and 2) *what do teachers need in order to develop their inquiry-based working?*

Teachers reported that, in their first years, they were mainly focussed on surviving in their classes. Thereafter, they became more involved in reflection and using literature (mostly related to their own teaching). However, when most teachers felt more confident in their teaching after about two years of teaching, there was a decrease in reflection and the use of literature in their own classes. Simultaneously, most teachers became more focussed on inquiry-based working at the school level. Regarding the second research question, this study showed that it was important for teachers' development in inquiry-based working to have ownership (enough freedom to make own choices) in their first years. Furthermore, teachers mostly mentioned structural conditions such as a role or function for inquiry-based working and sufficient time as prerequisites for engaging in inquiry-based working in these years. However, after two years of experience, the teachers increasingly mentioned factors related to an open and innovative culture wherein inquiry-based working is valued as being important for their development. In some schools the school culture enabled teachers to use and further develop their research expertise. Some teachers, however, had difficulties in collaborating with and motivating colleagues to engage in inquiry-based working, and in some schools, teachers were expected to gain a few years of teaching experience before they could get involved in issues related to the school organisation.

## **OVERALL CONCLUSION**

The overarching research question of this study was *to what extent and how do academically educated teachers contribute to inquiry-based working in primary schools?* The results showed that graduates of academic programmes can make important contributions to inquiry-based working in their schools. Academic student teachers

were more likely to exhibit an inquiring attitude and were more willing to use their research capacities in practice than regular teachers. Furthermore, academic teachers felt more confident about their research capacities after graduation than teachers who had graduated from regular programmes. However, it appeared that academic teachers were actually only more involved in using research in their own classes, and not in other forms of inquiry-based working. The qualitative data suggested that most academic teachers first used their skills in inquiry-based working at the classroom level and then further developed into using their skills at the level of the school organisation.

However, it also became clear that academic teachers will not automatically be able to use and further develop their research knowledge and competences in practice. This study provided insights into several factors that influence the development of academic teachers. Being assigned formal roles related to inquiry-based working in their schools was related to these teachers' involvement in inquiry-based working. Chapter 5 presented examples of teachers with such a role who had been able to use their knowledge in several research projects. Their school leaders were aware of their research skills and provided them with special positions and sufficient time, which enabled these teachers to use and conduct research in their respective schools. Furthermore, the results showed that a formal role in inquiry-based working was not only related to using and conducting research at the school level but also to reflecting on their own teaching.

## GENERAL DISCUSSION

Research into academic graduates' inquiry-based working is scarce. In particular, little is known about the contribution of academic graduates to inquiry-based working at the level of their school organisations (Struyve, Frijns, Vanblaere, Delrue, & De Fraine, 2019). Previous studies have focussed on this contribution; however, such studies reported on only a small number of graduates of a specific programme and often focussed on only the first year after graduation (Davis, Clayton, & Broome, 2018; Dunn, Harrison, & Coombe, 2008; Goodnough, 2011; Schulz & Mandzuk, 2005). Furthermore, existing studies have reported on the attitudes or motivation for inquiry-based working but not on the actual behaviour of graduates of academic programmes (Davis et al., 2018; Dunn et al., 2008; Goodnough, 2011; Maaranen, 2009; Schulz & Mandzuk, 2005; Vrijnsen-de Corte, Brok, Kamp, & Bergen, 2013a). Finally, none of these studies have focussed on the conditions that may contribute to teachers engaging in and further development in inquiry-based working.

To fill this gap, this study (1) compared graduates of academic programmes with those of regular programmes, (2) followed teachers three years after graduation, (3) combined



quantitative (large-scale) and qualitative research, (4) specifically reported on actual inquiry-based activities, (5) focussed on teachers' contributions not only at the level of the classroom but also that of the school and (6) investigated conditions within a school organisation that are important with regard to the development of inquiry-based working.

## **METHODOLOGICAL CONSIDERATIONS**

In this dissertation, a qualitative longitudinal approach was combined with a quantitative comparative approach. Two instruments were specifically developed for this study, one for measuring students' inquiring attitudes and the other for teachers' engagement in inquiry-based working. Although both questionnaires could be improved, we now have instruments that enable us to investigate teachers' inquiring attitudes and their involvement in inquiry-based working in a systematic manner and on a large scale. An increasing number of teacher education programmes describe themselves as 'research-based'. Preparing candidates for inquiry-based working is an aspect of what many programmes aim at (Afdal & Spernes, 2018; Aspfors & Eklund, 2017; Darling-Hammond, 2017; Menter, 2015). The instruments developed for this study attempt to operationalize what that means and may help teacher education institutes to evaluate how well they succeed in terms of this aim.

## **THEORETICAL REFLECTIONS**

The results of this study add to the conceptualisation of inquiry-based working and to previous insights concerning the involvement of teachers in inquiry-based working, and conditions that facilitate such work.

### **Inquiry-based working**

The terms 'teacher research' and 'inquiry-based working' or 'practice-based research' have been discussed in many studies (Ellis & Castle, 2010; Groothuisen, Bronkhorst, Prins, & Kuiper, 2019; Munthe & Rogne, 2015; Puustinen, Säntti, Koski, & Tammi, 2018; Wiseman, 2010; Zwart, Smit, & Admiraal, 2015). However, it is not always clear what is meant by these terms and how well these terms reflect what teachers do in practice. In this study, it proved to be helpful to conceptualise the term 'inquiry-based working' as forms of engaging with research that refer to the actual behaviour of teachers. Our conceptualisation of three different forms of inquiry-based working, namely (1) systematic reflection, 2) using research and 3) conducting research, makes it possible to obtain specific knowledge concerning the involvement of teachers in inquiry-based

working. Furthermore, we distinguished between inquiry-based working at the level of the classroom and the school organisation, which appeared to be an important distinction.

### **Conditions that encourage academic teachers to engage in inquiry-based working.**

The results of this study conformed findings from previous work showing that academic (student) teachers, from the start of their teaching careers, are motivated to engage in inquiry-based working at the school level. They also confirmed that these teachers expect to become involved in a role or function related to inquiry-based working (van der Wal-Maris, Geldens, & Beijaard, 2012; Doolaard, Dijkema, Prins, Claessens, & Ebbes, 2018; Broeks, Bakker, Hertogh van Meeuwen-Kok & Gondwe, 2018). Furthermore, this study showed that such a role contributed to teachers' involvement in inquiry-based working at the school level. However, teachers' expectations with regard to engaging in roles other than teaching in their first years and their motivation(s) to do so might conflict with the reality in their school (Willegems, Consuegra, Struyven, & Engels, 2017). Academically educated teachers in this study were negative about conditions in their schools, including the motivation of colleagues and the lack of time and support for inquiry-based working. Furthermore, some school leaders in this study appeared to be hesitant to assign roles other than classroom teaching to beginning teachers. According to the literature this is common in most school organisations (Cheng & Szeto, 2016). Only after five to seven years of teaching experience teachers may become more involved in roles related to school improvement (Louws van Veen, Meirink, & van Driel, 2017; Menter, 2015). This is understandable given difficulties in classroom management and other challenges faced by novice teachers (Cheng & Szeto, 2016; Dicke, Elling, Schmeck, & Leutner, 2015; Kelchtermans & Ballet, 2002; Louws van Veen, et al., 2017). However, this dissertation shows that, particularly for academic teachers, a role associated with inquiry-based working at the school level can provide them with possibilities to use and further develop their expertise and thus remain motivated for the teaching profession.

## **LIMITATIONS AND FUTURE RESEARCH**

The present study has some limitations. First, pre-measurements were not taken and the participants were not randomly distributed over the different teacher education programmes. Therefore, other factors than the teacher education programmes might have influenced the participants' involvement in inquiry-based working. One of these factors could be the teachers' level of secondary education. For academic teacher education, a higher level of secondary education (Vwo: pre-academic level) is required than for regular teacher education programmes (they require Havo: higher general

secondary education). The type of secondary education followed as such may have an influence on teachers' inquiring attitude and involvement in inquiry-based working. Research conducted by van der Wal-Maris et al. (2012) found that academic student teachers were already more motivated to engage in inquiry-based working than regular student teachers at the beginning of their studies. Furthermore, a study conducted by Doolaard et al., (2018) indicated that differences in pedagogical and teaching competences between regular and academic teachers might originate from their respective secondary education. Although our study did not focus on pedagogical and teaching competences, the level of secondary education might also influence inquiry-based working. Therefore, the differences in the involvement in inquiry-based working of graduates cannot directly be attributed to the different teacher education programmes.

Second, the results of the questionnaires that were developed and used for studies 1 and 3 (Chapter 2 and 4) must be interpreted with care. Some significant differences were found but the effect sizes were mostly small, which might be caused by the relatively small sample size and a ceiling effect for some of the scales.

Finally, academic teacher education programmes in the Netherlands are relatively novel. We decided to conduct a small-scale exploratory study among the first graduates of such programmes, which enabled us to obtain deep insights into the development of academic teachers in their first years. However, this approach also has its disadvantages. When following teachers for three years, there is the risk of dropout. In this study, 7 of the 10 teachers who participated in the first year participated in all three years. Two teachers made a transfer to secondary education, and one teacher was not willing to participate after the first year. In future research, it would be recommended to follow a larger group of teachers and to also include regular teachers. In the qualitative study, we did not interview the regular teachers, which made it difficult to reflect on differences between regular and academically educated teachers.

## **IMPLICATIONS FOR PRACTICE**

The findings of this study have implications for both academic programmes in teacher education and school organisations.

### **Implications for academic programmes in teacher education**

Previous research has shown that the curricula of academically oriented teacher education programmes often do not align with the practical orientation in schools (Aspfors & Eklund, 2017; Reis-Jorge, 2007; Volk, 2010). Chapter 2 of this study also showed that student teachers had difficulties in connecting research in teacher education

with actual practices in schools. Different research methods were addressed in the academic programme, but the focus was mostly on quantitative methods. However, the research issues that arise within school organisations often require a more qualitative approach (Gray, 2013). Many teachers will not have sufficient time and opportunities to conduct quantitative large-scale research, whereas small-scale and qualitative research is more achievable for teachers. The academic teachers from this study applied three forms of inquiry-based working in practice (systematic reflection, using research and conduction research). This way of working implies not only quantitative methods but also qualitative methods such as interviews and classroom observations. These methods should therefore be addressed in academic teacher education programmes.

Another implication for academic programmes and professional development programmes for beginning teachers is that such programmes should better prepare academic teachers for leadership roles related to inquiry-based working at the level of their school organisations. The importance of preparing student teachers for functioning in a school organisation has also been shown in previous research (Cheng & Szeto, 2016; Kelchtermans & Ballet, 2002; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017). The results of this study indicated that academic teachers sometimes found it difficult to collaborate with colleagues and to motivate them to engage in inquiry-based working. Of course, teacher education programmes cannot fully prepare teachers for how to function within an organisation. Induction programmes for academic teachers could therefore further focus on teachers' engagement in such roles. However, providing teachers with at least some knowledge in this area during their initial teacher education might prevent them from becoming demotivated to engage in inquiry-based working.

### **Implications for school organisations**

This study provides insights into conditions that are important for the functioning and development of academic graduates. The results of this study can be used to inform school leaders about the competences, motivations and needs of academic teachers. The common view in school organisations is that teachers should first learn to teach well and thereafter can be offered opportunities to develop in other areas (Cheng & Szeto, 2016; Louws, van Veen et al., 2017; Louws, Meirink et al., 2019; Menter, 2015). However, this study showed that, for academic teachers, it is important to be able to engage in inquiry-based work in their own classes and also to use or further develop their research expertise in their school organisations. Therefore, it is recommended that school organisations attempt to create conditions for academic teachers that allow them to take responsibility for teaching and also to work on improvements or innovations within the school organisation. This might help to reduce the praxis shock that academic teachers experience. The 'praxis shock' refers to the struggle of beginning teachers to teach in accordance with their beliefs about good teaching (Dicke, Elling, Schmeck, &

Leutner, 2015; Veenman, 1984). The academic teachers in this study perceived a different kind of 'practice shock': the opportunities to use their research expertise as a teacher were not in accordance with their expectations.

Furthermore, a professional development structure for beginning academic teachers in the form of an overarching school network might prove a valuable addition to the professional development activities that currently take place in schools (Gaikhorst, Beishuizen, Zijlstra, & Volman, 2015; Godfrey & Brown, 2018). The academic teachers in this study were often the only academic teachers in their school organisations. Through an overarching school network, academic teachers from different school organisations could exchange knowledge, conduct research and reflect on their experiences.

## **IMPLICATIONS FOR POLICY**

As a result of the introduction of academic programmes, we now have a group of teachers with critical attitudes and research expertise. Several studies have suggested that, to improve educational quality, teachers should collaborate in inquiry-based working and reflect on and improve the education offered in their schools based on research findings (Cochran-Smith & Lytle, 2009; Cordingley, 2015; Godfrey & Brown, 2018, 2019). This study showed that academic teachers need a role or function related to inquiry-based working within their schools to be able to use their research expertise at the level of the school organisation. There is a risk that academically educated teachers may leave the profession should they feel that they are unable to use their expertise (Broeks et al., 2018). In times of teacher shortages, it is particularly important to motivate and facilitate teachers in their professional development (Whalen, Majocho, & Van Nuland, 2019). This can be done by assigning special roles related to inquiry-based working in which the expertise of academic teachers is acknowledged. Facilitating school boards and schools to provide such roles or functions for academic teachers should be a focus of Dutch educational policy.

To conclude, this dissertation shows that academic teachers can contribute to inquiry-based working in schools. However, only introducing an academic programme is not sufficient. The results of this study can be used by teacher education institutes, school organisations and policy makers to provide optimal conditions for academic teachers in which they will be able to use their knowledge to continually reflect on and improve both their own teaching and the education provided in their school organisations.



## NEDERLANDSE SAMENVATTING (SUMMARY IN DUTCH)

### Inleiding

Wereldwijd is er een toenemend bewustzijn dat leraren een belangrijke rol spelen in het verbeteren van onderwijskwaliteit (bijvoorbeeld Hattie, 2009; Barber & Mourshed, 2007). In Nederland zijn er de laatste jaren daarom verschillende initiatieven genomen om de kwaliteit van leraren te vergroten. Eén van deze initiatieven is de oprichting van universitaire lerarenopleidingen voor het basisonderwijs. Sinds 2008 zijn op zes universiteiten in Nederland dergelijke opleidingen opgericht. Op deze universitaire lerarenopleidingen worden leraren opgeleid om onderzoeksmatig te kunnen werken. Onderzoeksmatig werken wordt gezien als een belangrijke manier om het onderwijs in scholen te verbeteren (Cordingley, 2015; Godfrey & Brown, 2018; Munthe & Rogne, 2015; Cochran-Smith & Lytle, 2009). Leerkrachten die onderzoeksmatig werken gebruiken onderzoek om te reflecteren op hun eigen lesgeven en op het onderwijs in hun school (Davis, Clayton, & Broome, 2018; Sachs, 2016; Van der Wal-Maris, Beijaard, Schellings, & Geldens, 2018). De verwachting is dat leraren die een universitaire lerarenopleiding hebben gevolgd hiertoe in staat zijn en zo een bijdrage kunnen leveren aan kwaliteitsverbetering in hun school. Doordat deze opleidingen vrij recent zijn ingevoerd, is echter nog niet bekend of universitair opgeleide leerkrachten ook daadwerkelijk onderzoeksmatig (kunnen) werken als ze eenmaal op een school werken. Het doel van deze studie is daarom meer inzicht te verkrijgen in de mate waarin en wijze waarop universitair opgeleide leerkrachten onderzoeksmatig werken, hoe ze zich hierin ontwikkelen en welke factoren daarop van invloed zijn.

Nederland is niet het enige land waar basisschoolleerkrachten een universitaire opleiding volgen. Ook in bijvoorbeeld Finland, Noorwegen, Canada, Singapore, Portugal en Ierland worden leerkrachten opgeleid op universiteiten en volgen ze een programma waar het gebruikmaken en uitvoeren van onderzoek deel van uitmaakt. Ook in deze landen is er echter nog weinig bekend over hoe afgestudeerden van universitaire opleidingen bijdragen aan het onderzoeksmatig werken in de school (Struyve, Frijns, Vanblaere, Delrue, & De Fraine, 2019). Het bestaande onderzoek is vaak kleinschalig en gericht op afgestudeerden van één specifiek programma (Davis et al., 2018; Dunn, Harrison, & Coombe, 2008; Goodnough, 2011; Maaranen, 2009; Schulz & Mandzuk, 2005; Struyve et al., 2019; Vrijnsen-de Corte, den Brok, Kamp, & Bergen, 2013a). Ook heeft het onderzoek vaak betrekking op de houdingen en motivatie met betrekking tot onderzoek van leerkrachten en betreft het niet de vraag of en hoe zij onderzoeksmatig werken. In dit proefschrift willen we hier meer inzicht in verkrijgen aan de hand van de volgende centrale vraag: *In hoeverre en hoe dragen universitair opgeleide leerkrachten bij aan het onderzoeksmatig werken in hun school?*

### **Universitaire lerarenopleidingen voor het basisonderwijs**

Deze studie richt zich op universitaire pabo's die een opleiding aanbieden die leidt tot een dubbel diploma. Studenten volgen daarbij vakken uit de reguliere pabo (HBO) en uit een wetenschappelijke bacheloropleiding (Pedagogische of Onderwijswetenschappen). Zij behalen uiteindelijk zowel een Bachelor of Education (HBO) diploma als een universitaire Bachelor of Science (WO). Er bestaan ook andersoortige academische lerarenopleidingen voor het basisonderwijs (bijvoorbeeld academisch georiënteerde opleidingen binnen een HBO Pabo) maar deze worden in dit onderzoek buiten beschouwing gelaten. Universitaire pabo's hebben zowel een beroepsgerichte als een wetenschappelijke oriëntatie. Studenten op universitaire pabo's worden opgeleid tot leerkracht maar leren ook onderzoek te gebruiken en uit te voeren (Landelijk netwerk Universitaire Pabo's Nederland, 2018). Ook op reguliere pabo-opleidingen is er aandacht voor onderzoek in het curriculum; op de universitaire pabo ligt echter meer nadruk op onderzoek en gaat het om wetenschappelijk onderzoek. Er is veel aandacht voor kwantitatieve en kwalitatieve onderzoeksmethoden en kritische reflectie op (internationale) onderzoeksliteratuur. De verwachting is dat academische studenten na hun afstuderen als leerkracht deze kennis gebruiken om onderzoeksmatig te werken en hierdoor bij te dragen aan de verbetering van de kwaliteit van het onderwijs (Doolaard, Dijkema, Prins, Claessens, & Ebbes, 2018; Snoek, Bekebrede, Hanna, Creton, & Edzes, 2017).

### **Samenvatting van de belangrijkste bevindingen en conclusies**

Dit proefschrift is gebaseerd op verschillende deelonderzoeken, waarin een combinatie van kwalitatieve en kwantitatieve onderzoeksmethoden is gebruikt. Hieronder worden de opzet en de belangrijkste bevindingen van de verschillende deelstudies beschreven.

In het eerste deelonderzoek (**hoofdstuk 2**) is met behulp van een vragenlijst de onderzoekende houding van reguliere en universitaire pabostudenten vergeleken. Tevens zijn de curricula van enkele reguliere en een universitaire pabo-opleiding geanalyseerd. De volgende vragen stonden centraal: *In hoeverre en hoe verschilt de onderzoekende houding van studenten die een universitair dan wel regulier curriculum gevolgd hebben? En (Hoe) weerspiegelen deze verschillen de plaats die onderzoek heeft in het universitaire en het reguliere curriculum?*

Voor het beantwoorden van deze vragen werd een vragenlijst ontworpen en afgenomen, een curriculumanalyse uitgevoerd en werden interviews gehouden. De vragenlijst was gericht op zes aspecten van een onderzoekende houding: kritisch willen zijn, willen delen, willen weten en begrijpen, willen doorzetten, willen innoveren en willen nemen



van verantwoordelijkheid (Jacobi & Van der Rijst, 2010). De vragenlijst is ingevuld door 230 reguliere en 30 universitaire studenten. Universitaire studenten bleken een meer onderzoekende houding te hebben dan reguliere studenten. De verschillen betreffen het aspect 'kritisch willen zijn'. Ook in de interviews kwam de kritische houding van universitaire pabostudenten duidelijk naar voren. De interviews lieten ook zien dat universitaire studenten gemotiveerd zijn om, na de opleiding, als leerkracht onderzoek uit te voeren en te gebruiken.

Uit de curriculumanalyse werd duidelijk dat onderzoeksmatig werken een plaats heeft in zowel het reguliere als het universitaire curriculum. Het universitaire curriculum omvat wel meer vakken waarin onderzoek naar voren komt en behandelt een grotere variëteit aan onderzoeksmethoden. Ondanks deze grotere variëteit ligt de nadruk in het universitaire curriculum op kwantitatief onderzoek, terwijl er in de reguliere programma's vooral aandacht is voor kwalitatief onderzoek. Een ander verschil is, dat in het universitaire curriculum in alle studiejaren vakken worden aangeboden die zijn gericht op onderzoek, terwijl zulke vakken in de meeste reguliere programma's alleen in het derde en vierde jaar voorkomen. De geïnterviewde studenten waren positiever over de kwaliteit van het onderzoek dat aangeboden wordt in het universitaire programma, al sloot het onderzoek binnen de reguliere programma volgens hen beter aan op de praktijk.

In het tweede deelonderzoek zijn tien universitair opgeleide leerkrachten drie jaar lang gevolgd en is gekeken naar de mate waarin zij onderzoeksmatig werken, in hoeverre en hoe zij zich hierin kunnen ontwikkelen en welke factoren hierin bevorderend of belemmerend zijn. **Hoofdstuk 3** geeft de resultaten weer van de eerste ronde interviews met tien leerkrachten en hun schoolleiders en van observaties van leerkrachten tijdens teambijeenkomsten. De onderzoeksvragen waren: *In hoeverre werken universitair opgeleide leerkrachten onderzoeksmatig in hun eerste jaren als leerkracht?* En *Welke factoren bevorderen of belemmeren het onderzoeksmatig werken van universitair opgeleide leerkrachten?*

Uit de interviews en de observaties bleek dat onderzoek een rol speelt in het werk van de meeste universitair opgeleide leerkrachten. Zij blijken drie vormen van onderzoeksmatig werken toe te passen, namelijk: 1) systematische reflectie, 2) het gebruik maken van onderzoek, en 3) het doen van onderzoek. Opvallend was dat ze deze vormen van onderzoeksmatig werken vooral toepassen in hun eigen klas en minder op schoolniveau. Alle leerkrachten gaven aan dat ze systematisch reflecteren op hun lesgeven, waarbij het bijvoorbeeld gaat om het (laten) observeren en evalueren van lessen. Schoolleiders zagen ook dat universitair opgeleide leerkrachten vanuit een kritische en analytische houding reflecteren op hun eigen handelen en ook op vragen op schoolniveau. De

meeste leerkrachten maakten gebruik van onderzoek: zo gebruiken zij literatuur om zich verder te verdiepen in bijvoorbeeld gedragsproblemen van kinderen in hun klas of om meer te weten te komen over effectieve methoden van lesgeven. Dit bleek echter niet door alle schoolleiders opgemerkt te worden. Tenslotte waren enkele leerkrachten betrokken bij de uitvoering van onderzoek. Deze leerkrachten hadden een rol in onderzoeksprojecten, waarbij de resultaten gebruikt werden om verbeteringen aan te brengen in het onderwijs in de school. Ten aanzien van de tweede onderzoeksvraag bleek dat de meeste leerkrachten eigenaarschap (oftewel de vrijheid om zelf keuzes te maken) en een formele rol of functie gericht op onderzoeksmatig werken in de school als belangrijkste factoren voor onderzoeksmatig werken zien. In de derde studie (beschreven in **hoofdstuk 4**) werd de mate van onderzoeksmatig werken van universitair en regulier opgeleide leerkrachten vergeleken en werd gekeken welke factoren hierop van invloed zijn. Voor deze studie is een vragenlijst ontwikkeld en ingevuld door 89 universitair en 113 regulier opgeleide leerkrachten. De resultaten van de vragenlijst zijn gebruikt om de volgende drie onderzoeksvragen te beantwoorden: *1) In hoeverre werken universitair en regulier opgeleide leerkrachten onderzoeksmatig en wat zijn de verschillen tussen deze groepen leerkrachten? 2) Hoe beoordelen universitair en regulier opgeleide leerkrachten de aanwezigheid van factoren die van invloed kunnen zijn op onderzoeksmatig werken? 3) Welke factoren beïnvloeden de mate waarin universitaire en reguliere leerkrachten onderzoeksmatig werken?* Voor de eerste twee onderzoeksvragen werden multivariate variantieanalyses uitgevoerd. Voor onderzoeksvraag 3 werden verschillende regressieanalyses uitgevoerd.

Uit de analyses volgt dat beide groepen leerkrachten vooral systematisch reflecteren en onderzoek gebruiken maar minder vaak onderzoek uitvoeren. Universitair opgeleide leerkrachten gebruiken tevens meer literatuur in hun eigen klas. Echter, er waren geen verschillen tussen beide groepen wat betreft reflectie en onderzoek doen. Daarnaast zijn er verschillen tussen beide groepen leerkrachten wat betreft de factoren die hun onderzoeksmatig werken beïnvloeden. Universitair opgeleide leerkrachten zijn negatiever dan reguliere leerkrachten over organisatorische factoren zoals tijd en motivatie van het team voor onderzoeksmatig werken. Daarentegen zijn universitair opgeleide leerkrachten positiever over hun eigen motivatie en vaardigheden voor onderzoeksmatig werken. Voor universitair opgeleide leerkrachten bleek een rol in een professionele leergemeenschap belangrijk te zijn. Leerkrachten die zo'n rol hebben, maken vaker gebruik van onderzoek en voeren vaker onderzoek op schoolniveau uit, maar zij reflecteren ook vaker systematisch reflecteren op het eigen lesgeven. Bij de regulier opgeleide leerkrachten bleek vooral het aantal jaren ervaring van invloed te zijn op hun onderzoeksmatig werken.

De laatste studie (**hoofdstuk 5**) geeft de resultaten weer van interviews met zeven universitair opgeleide leerkrachten in drie opeenvolgende jaren. De onderzoeksvragen

van deze studie waren: *Hoe ontwikkelen universitair opgeleide leerkrachten zich in onderzoeksmatig werken in de eerste jaren na hun afstuderen?* En *Wat hebben universitair opgeleide leerkrachten nodig om zich te ontwikkelen in het onderzoeksmatig werken?*

Uit deze studie bleek dat de leerkrachten in hun eerst jaar vooral bezig zijn met overleven in hun eigen klas. Na dit jaar gaan ze meer reflecteren en onderzoek gebruiken voor hun eigen lesgeven. Na zo'n drie à vier jaar, wanneer leerkrachten zich meer competent voelen in het lesgeven, gaan ze juist minder reflecteren en onderzoek gebruiken voor hun eigen lessen. Het onderzoeksmatig werken verschuift dan van hun eigen klas naar de school.

In verschillende fases van hun loopbaan bleken andere condities in de school van belang voor de ontwikkeling van de leerkrachten. In de eerste jaren dragen vooral structurele condities als voldoende tijd en een onderzoeksgerelateerde rol bij aan het onderzoeksmatig werken van leerkrachten. Leerkrachten met een aantal jaren ervaring noemen meer culturele condities, zoals een open en innovatieve schoolcultuur waarin onderzoeksmatig werken wordt gewaardeerd. In scholen met een 'onderzoekscultuur' kunnen leerkrachten hun vaardigheden goed benutten in onderzoeksprojecten. Sommige leerkrachten hebben wel moeite om samenwerking te bewerkstelligen en collega's voor onderzoeksmatig werken te motiveren. Ook waren er scholen waar van leerkrachten wordt verwacht dat ze eerst een aantal jaren ervaring opdoen voordat ze betrokken worden bij onderzoeksmatig werken in de schoolorganisatie. Dit heeft een negatieve invloed op hun ontwikkeling in onderzoeksmatig werken.

### **Conclusie en discussie**

Dit onderzoek biedt nieuwe inzichten in het onderzoeksmatig werken van leraren. In het onderzoek is, in aanvulling op eerdere onderzoeken: 1) een vergelijking gemaakt tussen leerkrachten die zijn afgestudeerd in een academisch programma en afgestudeerden van reguliere programma's; 2) kleinschalig kwalitatief onderzoek gecombineerd met grootschaliger kwantitatief onderzoek; 3) een tweetal instrumenten ontwikkeld om de onderzoekende houding en het onderzoeksmatig werken van leerkrachten meetbaar te maken; 4) de ontwikkeling van het onderzoeksmatig werken van leerkrachten gedurende langere tijd gevolgd; en 5) specifiek voor academische leerkrachten nagegaan welke condities maken dat zij onderzoeksmatig (kunnen) werken en zich hierin verder kunnen ontwikkelen.

De resultaten laten zien dat academische studenten een meer onderzoekende houding hebben dan studenten van reguliere pabo's. Ook zijn ze gemotiveerd om onderzoek te gebruiken en uit te voeren na hun afstuderen. Academische leerkrachten voelen zich competent in hun vaardigheden voor onderzoeksmatig werken dan regulier opgeleide

leerkrachten. Toch zijn er geen grote verschillen gevonden tussen academisch en regulier opgeleide leerkrachten in de mate waarin zij daadwerkelijk onderzoeksmatig werken in hun school. Wel maken academische leerkrachten vaker gebruik van onderzoek in de klas. Daarnaast lijken de meeste academische leerkrachten in het onderzoeksmatig werken een ontwikkeling door te maken van klas- naar schoolniveau. Maar daarvoor hebben ze wel een onderzoeksgelateerde rol in de school nodig, bijvoorbeeld een rol als onderzoekskoördinator.

Dit onderzoek bevestigt de uitkomsten van eerdere onderzoeken dat academische leerkrachten al in een vroeg stadium van hun carrière gemotiveerd zijn om onderzoeksmatig te werken op schoolniveau (van der Wal- Maris, Geldens, & Beijaard, 2012; Doolaard et al., 2018; Broeks, Bakker, Hertogh van Meeuwen-Kok & Gondwe, 2018). Zij worden opgeleid om onderzoeksmatig te werken en komen ook met die verwachting het beroep in. De realiteit in scholen sluit echter niet altijd aan bij hun motivatie en verwachtingen. Schoolleiders in deze studie bleken vaak voorzichtig in het toekennen van andere rollen dan lesgeven aan leerkrachten in hun eerste jaren. Ook ander onderzoek laat zien dat leerkrachten veelal pas na vijf tot zeven jaar ervaring betrokken worden bij rollen op schoolniveau (Louws, van Veen, Meirink, & van Driel, 2017; Menter, 2015). Dit is begrijpelijk gezien de vele uitdagingen die beginnende leerkrachten tegenkomen (Cheng & Szeto, 2016; Dicke, Elling, Schmeck, & Leutner, 2015; Kelchtermans & Ballet, 2002; Louws, van Veen et al., 2017). Deze studie laat echter zien dat het voor academische leerkrachten belangrijk is om al vroeg in hun loopbaan een rol gerelateerd aan onderzoeksmatig werken in de school te krijgen, omdat ze vanuit deze rol hun onderzoeksexpertise kunnen inzetten en verder ontwikkelen.

### **Beperkingen en vervolgonderzoek**

Deze studie heeft een aantal beperkingen. Ten eerste zijn er geen voormetingen verricht en zijn de deelnemers niet willekeurig verdeeld over de reguliere en universitaire programma's. Er kunnen daarom ook andere factoren van invloed zijn geweest op het onderzoeksmatig werken van de leerkrachten dan alleen de gevolgde lerarenopleiding. Een van deze factoren is dat voor toelating tot de universitaire pabo een vwo-diploma vereist is, terwijl de reguliere pabo toegankelijk is met een havo- of vwo-diploma en sommige mbo niveau 4-diploma's. Vooropleiding zou van invloed kunnen zijn op de onderzoekende houding en de mate waarin de leerkrachten onderzoeksmatig werken (Doolaard et al., 2018).

Ten tweede lieten de kwantitatieve onderzoeken wel significante verschillen tussen academisch en regulier opgeleide leerkrachten zien, maar de effecten waren niet groot. Dit is mogelijk veroorzaakt door de relatief kleine steekproef en door een plafondeffect bij een aantal scholen.

Een laatste beperking betreft de kleinschaligheid van de kwalitatieve studie. Er is gekozen voor een kleinschalige, longitudinale aanpak om leerkrachten uit de eerste lichter afgestudeerden van universitaire pabo's te kunnen volgen. Dit heeft veel inzicht opgeleverd in hun onderzoeksmatig werken in de klas en de school. Deze aanpak maakt het niet mogelijk om de uitkomsten te generaliseren. Inmiddels zijn er steeds meer academisch opgeleide leerkrachten werkzaam in het onderwijs. In toekomstig onderzoek zou een grotere groep (academische en regulier opgeleide) leerkrachten betrokken kunnen worden om na te gaan in hoeverre de gevonden resultaten ook voor nieuwe generaties gelden.

## **Implicaties voor de praktijk**

### *Implicaties voor universitaire lerarenopleidingen*

Eerder onderzoek heeft aangetoond dat het curriculum van (academische) lerarenopleidingen niet altijd aansluit bij de onderwijspraktijk (Aspfors & Eklund, 2017; Reis-Jorge, 2007; Volk, 2010). Ook de resultaten van deze studie laten zien dat studenten van universitaire lerarenopleidingen moeite hebben om het onderzoek vanuit hun opleiding te verbinden aan de praktijk. In het academische programma kwamen verschillende onderzoeksmethodes aan bod, maar de nadruk lag vooral op kwantitatieve onderzoeksmethoden. Vraagstukken uit de praktijk vereisen echter veelal een kwalitatieve onderzoeks aanpak (Gray, 2013). Bovendien is het voor leerkrachten haalbaarder om kwalitatief onderzoek uit te voeren in hun school, dan grootschalig kwantitatief onderzoek. De vormen van onderzoeksmatig werken die de academische leraren uit deze studie in hun school toepasten, vragen niet alleen een kwantitatieve aanpak, maar juist ook kwalitatieve methoden, zoals interviews en observaties in klas. Het is dus van belang dat ook deze in de universitaire lerarenopleiding aan de orde komen.

Daarnaast bleek dat de academische leerkrachten uit deze studie zich wel competent voelen op het gebied van onderzoek, maar het soms lastig vinden om samen te werken en collega's te motiveren voor onderzoeksmatig werken. Lerarenopleidingen zouden meer aandacht kunnen besteden aan vaardigheden die nodig zijn in dit soort samenwerkingsprocessen en aan het voorbereiden van studenten op een leiderschapsrol op het gebied van onderzoeksmatig werken. De beschikbare tijd in de initiële opleiding is echter beperkt en niet alles kan daar aan de orde komen. Ook inductieprogramma's voor academische leerkrachten zouden zich daarom kunnen richten op de ontwikkeling van dergelijke leiderschapsrollen.

### *Implicaties voor schoolorganisaties*

Deze studie biedt inzicht in condities die van belang zijn voor het functioneren en de ontwikkeling van academisch opgeleide leerkrachten. Schoolleiders kunnen hiervan gebruik maken om de capaciteiten van academische leerkrachten beter te benutten en hen meer te stimuleren in hun professionele ontwikkeling. Deze studie laat zien dat schoolleiders leerkrachten een onderzoeksrol kunnen geven waardoor ze hun onderzoeksexpertise kunnen inzetten en daarmee bijdragen aan verbeteringen en innovaties in de school.

Daarnaast kan een schooloverstijgend netwerk, waarin beginnende academische leerkrachten onderling expertise en ervaringen kunnen uitwisselen, waardevol zijn (Gaikhorst, Beishuizen, Zijlstra, & Volman, 2015; Godfrey & Brown, 2018). Veel respondenten in deze studie waren de enige universitair opgeleide leerkrachten in hun school. In een schooloverstijgend netwerk zouden academische leerkrachten van verschillende scholen elkaar kunnen ontmoeten, kunnen reflecteren op hun ervaringen en kennis kunnen uitwisselen.

### **Implicaties voor beleid**

Verschillende studies laten zien dat onderzoeksmatig samenwerken van leerkrachten een positieve invloed heeft op de kwaliteit van onderwijs (Cochran-Smith & Lytle, 2009; Cordingley, 2015; Godfrey & Brown, 2018, 2019). Door de oprichting van universitaire pabo's hebben we nu een groep leerkrachten met een kritische, onderzoekende houding en met onderzoeksexpertise. De academische leerkrachten in deze studie blijken een duidelijke rol nodig te hebben om ook daadwerkelijk samen te gaan werken met anderen op dit gebied en hun onderzoeksexpertise breder in de school in te zetten. Op dit moment krijgen zij een dergelijke rol nog niet altijd. Het risico bestaat dat academisch opgeleide leerkrachten het onderwijs verlaten als zij het gevoel hebben dat ze in de school hun vaardigheden niet kunnen gebruiken (Broeks et al., 2018). In de huidige tijd met een groot tekort aan leerkrachten, is het extra belangrijk leerkrachten te motiveren, faciliteren en uit te dagen in hun professionele ontwikkeling (Broeks et al., 2018; Whalen, Majocha, & Van Nuland, 2019). Dit kan gedaan worden door academische leerkrachten een onderzoeksrol te geven waarin hun expertise erkend wordt en van waaruit ze zich verder kunnen ontwikkelen. Schoolbesturen en scholen faciliteren om leraren een dergelijke rol te kunnen geven en de condities te creëren die zij nodig hebben om zich verder te kunnen ontwikkelen zou daarom een prioriteit moeten zijn in het Nederlandse onderwijsbeleid.

### **Algemene conclusie**

Deze studie draagt bij aan theoretische inzichten over de mate waarin en de wijze waarop universitair opgeleide leerkrachten bijdragen aan het onderzoeksmatig werken in hun

Nederlandse samenvatting (summary in dutch)

school. Met behulp van de bevindingen uit deze studie kunnen lerarenopleidingen, schoolorganisaties en beleidsmakers zorgen dat universitair opgeleide leerkrachten hun onderzoeksexpertise kunnen inzetten en verder ontwikkelen ten behoeve van kwaliteitsverbetering.

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## **ABOUT THE AUTHOR**

Jan Baan was born on the 14<sup>th</sup> of June, 1982, in Eindhoven, the Netherlands. He graduated from teacher education in Ede-Wageningen in 2004. Thereafter Jan started working as a primary school teacher in the south-east of Amsterdam.

After five years of full time teaching, he combined his teaching job with a master in educational sciences at the VU University in Amsterdam. During this master, he became interested in educational research, which was an unfamiliar area during his work as a primary teacher. He also got in contact with students of the first year of the academic primary teacher education programme at the VU University. In this programme student-teachers were educated as teacher researchers with the ability to teach and to adapt their knowledge about educational research in practice. This was exactly his topic of interest. Therefore, he wrote his master thesis about academic teacher education.

Jan graduated cum laude in 2013. Thereafter he wrote a proposal for a PhD-grant for teachers together with Monique Volman and Lisa Gaikhorst. After being awarded with this grant, he started his PhD-trajectory in 2014. Jan is currently working as a primary school teacher, teacher educator and researcher. His research interests include: academic teacher education, teacher professional development, teachers' inquiry-based working and the support of beginning teachers.

## LIST OF PUBLICATIONS

### Peer-reviewed publications

Baan, J., Gaikhorst, L., & Volman, M. L. L. (2019). The Involvement in inquiry-based working of teachers of research-intensive versus practically oriented teacher education programmes. *Teaching and Teacher Education*, *84*, 74-82. <https://doi.org/10.1016/j.tate.2019.05.001>

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### Papers in progress

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### Other Publications

Gaikhorst, L., Geven, S., & Baan, J. (2019). Diverse leerlingen, diverse competenties, diverse verwachtingen? De rol van basisschoolleerkrachten in het creëren van kansengelijkheid. In H. van de Werfhorst, & E. van Hest (Eds.), *Gelijke kansen in de stad* (pp. 36-54). Amsterdam: Amsterdam University Press. <https://doi.org/10.5117/9789463728829>

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Baan, J., Gaikhorst, L. & Volman, M. L. L. (2016). *Symposium - Academische pabo's als brug tussen wetenschap en praktijk*. Paper presented at Onderwijs Research Dagen (ORD) 2016, Rotterdam, Netherlands

Baan, J., Gaikhorst, L. & Volman, M. L. L. (2019). *Poster session VOR - Onderzoeksmatig werken door universitair opgeleide basisschool leerkrachten*. Poster, presented at Velon congress 2019, Breda, Netherlands

## **PAPERS IN THIS DISSERTATION AND CONTRIBUTIONS OF CO-AUTHORS**

### **Chapter 2 is based on:**

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Contributions: Jan Baan is the first author of this paper. He reviewed literature, collected and analysed data in the context of his master thesis guided by Prof. Dr. Bert van Oers. After completing his master Jan changed the thesis into a research paper. The research team consisted of Monique Volman and Lisa Gaikhorst, who were the supervisors of Jan Baan. The research team discussed all the steps in the process of analysis and its outcomes, and where necessary the primary data were rechecked. The supervisors contributed to the analysis and interpretation of the data, and reviewed and revised the manuscript.

### **Chapter 3 is based on:**

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Contributions: Jan Baan is the first author of this paper. He reviewed literature, collected and analysed data, and drafted the initial manuscript. The research team further consisted of Monique Volman and Lisa Gaikhorst, who were the supervisors of Jan Baan. The research team collaboratively conceptualized and designed the study. As a form of an audit, the research team discussed all the steps in the process of analysis and

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Contributions: Jan Baan is the first author of this paper. Jan collected the data in collaboration with master student Louise Verhoef. Jan reviewed literature, analysed the data, and drafted the initial manuscript. The research team further consisted of Monique Volman and Lisa Gaikhorst, who were the supervisors of Jan Baan. The research team collaboratively conceptualized and designed the study. As a form of an audit, the research team discussed all the steps in the process of analysis and its outcomes, and where necessary the primary data were rechecked. The supervisors contributed to the analysis and interpretation of the data, and reviewed and revised the manuscript.

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