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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.

1. 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 & Spernes 2018; Darling-Hammond 2017; Gleeson, Sugrue, and O'Flaherty 2017; Flores 2016; Hulse and Hulme 2012; 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 et al. 2017). The regular, professionally-oriented teacher education programmes in the Netherlands are bachelor programmes

organised in institutes for higher professional education (Van der Linden et al. 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.

1.1. 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 et al. 2016). Meijer et al. (2016) referred 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.

1.2. 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 et al. 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 Krokfors (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.

1.3. 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?

1.4. 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.

2. Methods

2.1 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.

2.2. 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.

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.

Table 1. Characteristics of participants in percentages.

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.

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.

2.3. 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.

2.3.1. 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 = −.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, 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.

2.4. 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.

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

Table 2. Examples of competences for performing research.

Phases	Competences		
Development of a research design	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.
Analysing and interpreting data	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.
Being able to formulate problem statements and hypotheses	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).

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).

3. Results

3.1. 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.

3.1.1. 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)

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	> .000*	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

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

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.

3.1.2. 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,[1]

> '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.'

3.2. 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.

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

	Academic curriculum	Professional curriculum*
Courses involving research assignments	12	2 – 9
Courses involved in years of the study	Year 1, 2, 3 and 4	Year 2, 3 and 4 or 3 and 4
Forms and methods of research	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.
Use of literature	Focus on academic and international literature	Focus on practical literature
Competences for conducting research	16 competences involved in curriculum.	9–14 competences involved in curriculum.

Note * This column contains information of the curriculum of 4 professional programmes.

3.2.1. 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.

3.2.2. 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 we 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.

3.2.3. 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.

3.2.4. 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).

3.2.5. 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 generalisable 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 where 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 et al. 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 competencesfor using and conducting research is a complex and time consuming process (Afdal and 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.

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1. Pseudonyms are used.

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