Collaboration in groups during teacher education

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Chapter 1
Introduction

1.1 Background to the study

Teaching is a process that mostly takes place between one teacher and a class of pupils. Apart from rather incidental meetings about common decisions concerning the curriculum and pupils, colleagues generally only meet in between classes, in the hallways or during breaks. As such, teachers often feel that teaching is too isolating as a profession (Flores & Day, 2006; McLaughlin & Talbert, 2002; Westheimer, 1999). As a response to this isolation, (professional) teacher communities have received a lot of attention during the last three decades within educational policy as well as within the research field (Achinstein, 2002; Grossman, Wineberg, & Woolworth, 2001; Little, 2002, 2003; McLaughlin & Talbert, 2001; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). Many advantages of such communities have been described, for the school in terms of the development of a shared vision and collective capacity, for teachers in terms of their professional development, and for pupils in terms of improvements in outcomes. Talbert and McLaughlin (2002) found that teachers who collaborate on instruction hold higher expectations for both students and colleagues, are more innovative in their classrooms, and have a stronger commitment to the teaching profession.

At the same time, teacher communities are not automatically successful (e.g., Achinstein, 2002; Stoll et al., 2006). As such, it is important to thoroughly prepare for working in communities. This preparation should start during teacher education, as for most student teachers, this is the first context in which they come into contact with different aspects of the teaching profession, as well as with other student teachers whom they have to work with. It is therefore relevant to consider the ways in which teacher education could prepare student teachers for their future participation in teacher communities. As a form of preparation for the collaborative conditions of the workplace, engaging in collaborative acts during education is becoming increasingly important (Brown, Collins, & Duguid, 1989). Collaborating in groups during teacher education can provide models for student teachers, through which they can learn about the practices of working in communities by means of experiencing such practices themselves. In the literature on teacher education, very little attention has been paid to collaboration or the development of communities (Ruys, Van Keer, & Aelterman, 2010). The aim of this research is to study the ways in which student teachers collaborate in groups, as well as possible improvements to such collaboration.

1.2 Theoretical framework

1.2.1 Collaboration in teacher education

A great deal of research has been dedicated to exploring the effects of collaboration in classrooms (e.g., for problem-solving, see Fawcett & Garton, 2005; for reasoning, see Rojas-Drummond & Mercer, 2003; for constructive competition, see Williams & Sheridan, 2010; for a review on the role of the teacher, see Webb, 2009). Although there are studies which describe specific collaborative activities in teacher education (e.g., Kaasila & Lauriala, 2010; Korthagen, Loughran, & Russel, 2006; Richards, 2008; Slostad, Baloche, & Darigan, 2004), some studies which describe collaboration in teacher education by means of computers (e.g., Lockhorst, Admiraal, Pilot, & Veen, 2002; So, Pow, & Hung, 2009), and studies that focus on collaboration between student teachers and experienced teachers in the school context (e.g. Vandyck, De Graaff, Pilot, & Beishuizen, in press; for a review, see Darling-Hammond & Hammerness, 2005), studies that systematically describe and analyze the practices of face-to-face collaboration in the context of teacher education are scarce.

Ruys et al. (2010) investigated collaborative learning in the context of teacher education and found that student teachers collaborate only occasionally. Timoštšuk and Ugaste (2010) similarly found that teacher education is often rather individualistic. Some positive effects of collaborative learning in teacher education have been reported. As is the case with many practices in teacher education, collaboration can have a dual effect. First, it affects the learning processes of the student teachers themselves. In this respect, Chamberlin-Quislisk (2010) found that collaboration can create a safe climate and build trust between student teachers, which provides opportunities to give feedback and reflect together. Second, student teachers can learn how to instruct pupils in the classroom in such a way as to encourage collaboration. In this respect, collaboration in teacher education was found to have a positive effect on the cooperative instruction skills of student teachers in the classroom (Veenman, Van Benthum, Bootsma, Van Dieren, & Van der Kemp, 2002). In order to prepare student teachers to learn the value of collaboration in their future classrooms, as well as to increase their own competence in collaborating with peers, collaboration in teacher education can be helpful (Brody, 2004).

1.2.2 Community development

In this dissertation a study on collaboration as a process of community development in different types of groups in teacher education is reported. This approach stems from the idea that learning becomes more meaningful when it is not an individual activity, but situated within a (teacher) community (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991; Roth & Lee, 2006). When learning is embedded in an activity and makes deliberate use of the social context, usable, robust knowledge can be developed (Brown, Collins, & Duguid, 1989).

A community perspective is mostly applied in the context of collaboration between professionals, such as teachers in a school. A teacher community is defined by Admiraal, Lockhorst, and Van der Pol (in press) as "*a group of teachers who are socially interdependent, who participate together in discussion and decision making, and share and build knowledge with a group identity, shared domain and goals, and shared interactional repertoire*". These researchers have discerned, in accordance with the work of Wenger (1998), three dimensions through which communities and community development can be described:

- *Group identity* is the mutual engagement that binds teachers together in a social entity (the nature of the community);
- The *shared domain* consists of a joint enterprise as understood and continually negotiated by its members (what a community is about);
- The *shared interactional repertoire* is the shared practice of and beliefs concerning how teachers in a group interact (how a community functions).

This definition and these three dimensions provide valuable insights into teacher communities and their development.

This dissertation deals with *student* teachers who undertake an educational program at a teacher education institute. Communities in such a context are different from professional teacher communities in two ways. First, learning is the objective within groups of student teachers, whereas learning is generally not the primary aim of professional teacher communities. For this reason, scholars sometimes reserve the term "community of practice" (Wenger, 1998) for professional communities and terms such as "learning communities" (Bielaczyc & Collins, 1999; Brody, 2004; Lieberman, 2000; Roth & Lee, 2006) and "communities of learners" (Brown & Campione, 1994; Matusov, 2001) for educational contexts, in which there is a more explicit focus on learning, rather than a focus on work. Second, student teacher groups are part of a relatively short, pre-defined and fixed curriculum for teacher education. The student teachers therefore do not have the opportunity to freely organize their own groups based on their own preferences. This is in contrast with professional communities that are often said to form naturally, exist for a

sustained period of time and engage in self-determined tasks (Wenger, McDermott, & Snyder, 2002). Based on both of these points, Wilson, Ludwig-Hardman, Thornam, and Dunlap (2004) have introduced the notion of "bounded learning communities". They describe such educational groups as being bounded by the expectations inducing participation and by the timeframe of a course. This "boundedness" applies to the participants within the present study, who are therefore best considered as participants in "bounded student teacher learning communities". We feel that it is valuable to consider the community development of such groups, as these types of communities provide a social context for learning and can serve as a bridge between the school and work environments (Wilson et al., 2004).

For such special types of communities, self-management is not self-evident, despite the fact that this is thought to be an important aspect of communities (Wenger, McDermott, & Snyder, 2002). Penuel, Riel, Krause, and Frank (2009) discuss two teacher communities, of which the better one was less hierarchical and left more room for teachers to take on responsibility themselves. Roth and Lee (2006) similarly stress that using the notion of community with respect to pupils or students is useless unless students have some control over the process. Grossman, Wineburg, and Woolworth (2000) state that, for a community to form, group members have to take on the regulation of social interactions and group norms themselves. As we study student teacher communities as contexts in which student teachers are prepared for professional teacher communities, one of the issues to consider is the degree of autonomy which student teachers have, which is reflected in the extend to which they take shared responsibility for regulating their collaboration. The overall research questions which are central to this dissertation are: *How does collaboration in groups of student teachers take place? How can the community development of such groups be improved?*

1.3 Outline[1]

The general aim of this dissertation is to provide insights into the opportunities that teacher education programs can offer to student teachers in terms of working and learning in communities. In order to achieve this aim, four studies were conducted within the context of teacher education.

[1]As this dissertation consists of four articles that are (going to be) published in different journals, there is some overlap between the different chapters and the language (American English or British English) differs.

First, Chapter 2 contains a report on a study of the state of teacher education in terms of how teacher education institutes currently prepare student teachers for collaboration in communities. The preparation for such collaboration is described in terms of acquiring "community competence". This study therefore provides insights into the current collaborative practices in teacher education, which will be investigated on three levels of the curriculum: the intended, the implemented and the attained curriculum (Van den Akker, 1998, based on Goodlad, 1994). Interviews with Heads of Department, teacher educators and student teachers, observations of groups and document analysis of study guides, portfolios and electronic learning environments will provide insights into the practices of the different programs. The research question of this study is: *To what extent do the teacher education curricula in three teacher education institutes in the Netherlands pay attention to and aim to stimulate the development of community competence?*

Following on from the ways in which teacher education programs prepare student teachers to collaborate in communities at school, possible ways to improve the practices within such programs are considered in Chapter 3. This chapter contains a report on an empirical investigation into the possibilities for the improvement of different types of group within a teacher education program from a community perspective. The types of group within the teacher education institutes which were investigated were: *mentor groups*, in which student teachers learn about general educational topics; *subject matter groups*, in which student teachers learn how to teach their specific subject; *research groups*, in which student teachers collaborate on a small-scale educational research project; and *reflection groups*, in which student teachers reflect on their experiences at school. For each of these groups, a specific set of design principles was developed, which aimed to encourage community development. We made use of a communicative design approach, meaning an approach in which educational designers and stakeholders discuss and agree upon the design principles (Visscher-Voerman & Gustafson, 2004). In this study, this means that sets of design principles were created in collaboration with teacher educators and other stakeholders, and that they were grounded in current practice. As such, sets of design principles that fitted the specific context were assured. The research question of this study is: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of group in teacher education?*

The sets of design principles were implemented in the four types of group in two rounds. Observational data were gathered during this implementation process, complemented with data from stimulated recall interviews, data from the electronic learning environments and email correspondence. When analyzing these data, attention was drawn towards the regulation of collaboration as a precondition for good collaboration, as it was found to give direction to and to support the collaborative process within a group.

Student teachers' taking on an active role in the regulation of collaboration can be seen as an indicator of self-organization. This study of the regulation of collaboration is complementary to the previous study which determined design principles, in that it focuses explicitly on the process and stance of student teachers. Chapter 4 contains a report on an investigation into the way in which student teachers and teacher educators regulate collaboration in each type of group. This type of regulation directs and supports the interaction in a group. Discourse analysis (Taylor, 2001) was performed in order to look at the ongoing collaboration in groups, by looking at the utterances of group members in a chronological way. The regulative actions of group members were studied in a dialogical way (Akkerman, Admiraal, Simons, & Niessen, 2006; Wegerif, 2008), which means that each action was seen as part of, and determined by, an ongoing activity. This study aims to provide insight into the way in which collaboration is regulated in different types of group. The question which is central to this study is: *How do student teachers regulate collaboration in different types of group in the context of a teacher education program?*

When investigating the four types of group, it was found that the research group had a complexity which made community development very difficult. This complexity stems from the demanding nature of research activities, and especially collaborative research, for (student) teachers (Atay, 2008; Bianchini & Cavazos, 2007; Lunenberg, Ponte, & Van der Ven, 2007). Chapter 5 specifically focuses on the *research group* as a complex type of group. This study explores how two small research groups engage in inquiry. Two processes of inquiry were discerned, namely decision making and elaboration. When elaborating, group members listen, exchange and build on each other's ideas, whereas decision making involves coming to a shared conclusion about how to proceed. In this study, observational data are presented in combination with data from electronic communication and stimulated recall interviews. This study aims to show how the collaborative process takes place within the research group. The research question of this study is: *What roles do elaboration and decision making play in the inquiry process of research groups in teacher education?*

Chapter 6 presents the conclusions of the four chapters and discusses the dissertation as a whole. Furthermore, the methods, limitations and implications of this dissertation for research and practice are discussed.

Chapter 2

The development of community competence in the teacher education curriculum[2]

Teachers are expected to frequently collaborate within teacher communities in schools. This requires teacher education to prepare student teachers by developing the necessary community competence. The present study empirically investigates the extent to which teacher education programmes pay attention to and aim at stimulating the development of community competence in the intended curriculum, the implemented curriculum, and the attained curriculum. Various types of data are gathered and analysed in respect of these three curriculum representations. It appears that community competence is weakly conceptualised in the intended curriculum. In the implemented, and especially the attained curriculum, this results in no systematic and explicit practice in terms of the development of community competence.

[2]Submitted for publication in adapted form as: Dobber, M.*, Vandyck, I.*, Akkerman, S.F., De Graaff, R., Beishuizen, J., Pilot, A., Verloop, N., & Vermunt, J.D. The development of community competence in the teacher education curriculum. *both authors should be considered first author.

2.1 Teacher education and community competence

It is increasingly emphasised that teachers, in addition to their primary classroom-related work, are expected to collaborate with colleagues within their schools (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). In the legislation of many countries (for example, for Australia, see Johnson, 2003; for the USA, see Anderson, 1998), collaboration is described as one of the key aspects of the teaching profession. Also in the Netherlands teachers are formally expected to make constructive contributions to different kinds of meetings within the school, to activities which enable the school to function appropriately, and to the continuing development and improvement of the school (Stichting Beroepskwaliteit Leraren, 2004).

This demand for more collaboration in schools is reflected in the educational and the organisational literature, where it is argued that collaboration can contribute to personal as well as organisational development. The construct of communities of practice has been suggested as a way to overcome the separation between personal and organisational development, as it brings together both the social structure within institutions and experiences of everyday existence and interpersonal events (Cobb, McClain, de Silva Lamberg, & Dean, 2003). In the context of schools, teacher communities are often mentioned as fruitful collaborative contexts as they provide an ongoing venue for teacher learning to improve professional practice, collective capacity, and continuing intellectual development (Grossman, Wineburg, & Woolworth, 2001; Little, 2003; Hammerness, Darling-Hammond, & Bransford, 2005). Hence, it is argued that teacher communities help teachers to "develop a vision for their practice; a set of understandings about teaching, learning, and children; dispositions about how to use this knowledge; practices that allow them to act on their intentions and beliefs; and tools that support their efforts" (Hammerness, Darling-Hammond, & Bransford, 2005, p. 385-386).

Although the effect of participating in communities on the teaching performance of teachers or the learning process of pupils is not straightforward, it is obvious that contemporary teaching practice demands collaborative teachers with sufficient community competence. Hence, it is important that teacher education at least partially focuses on the development of the community competence that student teachers need in order to collaborate with colleagues and to participate in teacher communities in schools. Some authors argue that teacher education institutes do not meet this expectation. For example, Beck and Kosnik (2001) state that, despite the emphasis on collaboration in schools, teacher education often remains rather individualistic. They base their statements on the empirical studies by Lortie (1975) and Goodlad (1990) which found that student teachers perceived teaching as an individual affair and they were not taught otherwise in the teacher education programme. In spite of the movement of the past fifteen years toward linking teacher

education to professional development schools, it has been suggested that the situation has not changed significantly since Lortie and Goodlad. In designing teacher education, Timoštšuk and Ugaste (2010), Whitford and Metcalf-Turner (1999) and Tom (1997) claim that we still largely ignore the social dimension of teaching and the value of community development.

In the present study we empirically investigated these claims by looking at the extent to which teacher education programmes pay attention to and aim at stimulating the development of community competence. Derived from a definition of social competence in the context of communities by Admiraal, Lockhorst, Beishuizen, and Pilot (2007, p. 64), we defined the community competence of a teacher as "the ability to establish, maintain and develop relationships with other professionals, to contribute to a professional learning and working culture in the school". Student teachers may have achieved a certain level of community competence from previous experiences in their academic, professional and social life (e.g., during their master's study at university or a secondary job) but most of them will not have had many experiences within the context of teacher communities. Consequently, we consider teacher education to play an important role in preparing student teachers for successfully functioning within the teacher communities they will come across at school. This means that student teachers have to learn how to collaborate as well as to reflect upon this collaboration. As such, we may expect that teacher education not only acknowledges the importance of community competence, but also actively organises activities to stimulate the development of community competence, including reflection on this development and suitable assessment procedures.

We report on a study into the current state of the art in three teacher education institutes in the Netherlands which represent the practices within the Dutch postgraduate teacher education curriculum. This provides an interesting context for studying community competence, as the educational policy differs from most other northern European countries: in these other countries the impact of governmental interference is stronger and more profound than in the Dutch system, in which the "content and shape of programmes (and the accompanying innovations) are the responsibility of the teacher education institutes" (Swennen, Volman, & Van Essen, 2008, p. 247).

To investigate the extent to which teacher education pays attention to and aims at stimulating community competence development we considered three different representations of the curriculum, as distinguished by Van den Akker (1998, based on Goodlad, 1994). These representations are the intended curriculum, the implemented curriculum, and the attained curriculum. The *intended* curriculum describes the original vision, basic philosophy, rationale, or mission underlying the curriculum, as well as documentation about the courses, which can have either a prescribed and obligatory or exemplary and voluntary status. The *implemented* curriculum concerns the teachers'

interpretations of what the intended curriculum intends and implies, and defines the nature and content of the interactions between teachers, students, and resource materials which take place in the classroom. Finally, the *attained* curriculum refers to the actual learning experiences that the students undertake and the learning outcomes achieved by the students, as recorded in the results of their assessments (Van den Akker, 1998). When attention is given to a certain type of competence on all three levels, we expect this competence to be better conceptualised within the programme and as such be more deeply embedded into the programme.

The Van den Akker's framework (1998) provides an opportunity to present a more detailed view of the extent to which the development of community competence is stimulated in teacher education. Therefore, it was possible to detect to what extent the statement that teacher education institutes are inclined to be individualistic is true for the three Dutch teacher education programmes under investigation. First, the methodology used in this study is described. Then, we present the results, describing how the development of community competence is embedded at the three curriculum levels. Finally, our conclusions are presented, based on our overview of the combination of the three curriculum levels and we discuss the implications of these findings for the teacher education programme. The research question central to this study was the following: *To what extent do the teacher education curricula in three teacher education institutes in the Netherlands pay attention to and aim to stimulate the development of community competence?*

2.2 Method

2.2.1 Setting

This exploratory study took place in three postgraduate teacher education institutes in the Netherlands. In the Dutch context, students enrolling in such programmes have already obtained a master's degree in a relevant school subject. The programmes consist of a one-year teacher training course during which half of the week is spent on school-related activities and the other half is dedicated to activities in the institute. School-related activities are performed in the form of an internship or a paid job at a school; they involve actual classroom teaching and sometimes class observation and classroom-related research as well. During this internship or job, students are supervised by a mentor in the school. The internship gradually shifts from students observing other teachers to handling classes independently. Students spend one or two days a week at the institute, and also perform activities for the institute at home or at school. There are great differences between teacher education institutes and schools in the Netherlands with respect to the design of the

partnerships between school and university (Maandag, Deinum, Hofman, & Buitink, 2005; Van Velzen & Volman, 2009). As we have already pointed out, since government influence on the teacher education curriculum in the Netherlands is less strong than in other North European countries (Swennen, Volman, & Van Essen, 2008), institutes have some freedom in designing their curriculum.

The three teacher education institutes investigated in this study are among the largest in the Netherlands, and each offers teacher education in approximately 15 different school subjects. In all three institutes, the programmes start with an introduction week in which the student teachers are assessed, formulate their own personal development plan, are oriented towards the teaching profession, and get to know each other. After this introduction period, student teachers get involved in different kinds of groups. All student teachers are enrolled in four different groups: mentor groups, subject matter groups, reflection groups, and research groups. In the mentor groups, student teachers work on their personal development as teachers, in the subject matter groups they learn the specifics of teaching their own subject (e.g., biology), in the reflection groups they reflect on their experiences of school-related activities, and in the research groups they carry out a small-scale educational research project. The development of the student teacher throughout teacher education is assessed by means of an electronic portfolio written by the student teacher and a final assessment by the teacher educator and the school mentor. In the portfolio, the students have to provide descriptions of and evidence for their growing teacher competences.

2.2.2 Data

We selected the three teacher education institutes on the basis of their involvement in university-based postgraduate teacher education and their size. These institutes are among the largest in the Netherlands, enrolling 100 to 200 student teachers per year. To consider the different curriculum representations and reach triangulation (Miles & Huberman, 1994), we gathered various types of data. Table 2.1 shows which data sources are related to the different curriculum representations of Van den Akker (1998). We studied the opportunities the program offered to stimulate the development of community competence by collecting information on the arrangement of collaboration within the programmes. Using the concept of collaboration facilitated the conversations with the interviewees because the (student) teachers were more familiar with the concepts of collaboration, collaborative activities and collaborative competence than they were with community (competence). Additionally, the arrangement of collaboration within the different programmes is seen as the context in which community competence can be used and learned.

Table 2.1

Overview of data sources related to curriculum levels and institutes

Curriculum representations (Van den Akker, 1998)	3 study guides	Interviews with 3 heads of department	Interviews with 13 teacher educators	Interviews with 9 student teachers	Portfolios of 46 students	Observation of 7 groups	3 electronic learning environments
Intended curriculum	x	x	x				
Implemented curriculum			x			x	x
Attained curriculum				x	x		
Institutes:							
Institute 1	1	1	7	6	14	5	1
Institute 2	1	1	2	2	10	2	1
Institute 3	1	1	4	1	22	0	1

The study guides of the three institutes were analysed to gain insight into the formal programme of each institute. The guides present the vision and mission of the teacher education institutes, which are potentially related to the development of community competence. Interviews with the department heads of all three institutes were also conducted as a source of insight into the intended curriculum. They answered generic questions about their visions and missions regarding the development of community competence. Similarly, interviews with teacher educators were conducted as a source of information on both the intended and the implemented curriculum. Regarding the intended curriculum, teacher educators talked about their vision on the development of community competence. Regarding the implemented curriculum, the teacher educators explained their perceptions of the curriculum, and specifically about whether and how they embedded the development of community competence in their teaching practice. We selected thirteen teacher educators from the three different institutes, as that number offered us the possibility to include teacher educators responsible for all types of groups and from different subjects, in order to obtain an overall view. Interviews with student teachers were held to enable us to describe the attained curriculum. They talked about possible learning processes concerning the development of their community competence. We selected nine student teachers from different subjects, so that all institutes were represented. They were in

the final phase of their education so that they could reflect on the whole study year and all types of groups in which they participated, and were willing and able to give a complete description of the kinds of activities undertaken during the programme. All interviews were semi-structured and mainly focused on the extent to which the development of community competence was deemed important, and how it was implemented in the curriculum. The interviews were the primary source of evidence in this study, combined with study guides, portfolios, observations and digital environments in order to have a complete overview of the way teacher education stimulates community competence development. The statements of the interviewees will be used in this article to exemplify the results of our study.

We randomly selected the portfolios of 46 student teachers to represent the learning outcomes in community competence, again of different institutes and different subjects. This relatively large number of portfolios gave us the chance to verify the data of the interviews with a larger group of student teachers. Different types of groups were observed to gain insight into the implemented curriculum. As there were no formalised research group meetings at the time we conducted this study, we were not able to observe these groups. We were also unable to attend the groups at one of the institutes. We included a total of seven groups in order to get an overview of all types of groups available at the time. Additionally, the logs of the electronic learning environments of each of the different types of groups were collected, to examine the process of the development of community competence taking place digitally.

2.2.3 Data analysis

The three curriculum representations of Van den Akker (1998) were used to analyse the different data. We used Atlas.ti (Scientific Software Development GmbH, Berlin, Germany) for the analysis of the interviews. The derived analytic scheme was used by the first two authors to code all interviews during several rounds until full agreement was reached. The other data sources were analysed separately by the two first authors.

To determine the aim of the *intended curriculum*, we reviewed the study guides and analysed the data from the interviews with the teacher educators and the heads of department. In the study guides, we scrutinised all texts to search for references to (the development of) community competence. We included all sentences referring to the acquisition of community competence in the mission/vision statement, the learning aims, the course descriptions, and the assessment procedure. From the interviews, we used those parts in which the interviewees described what they considered to be the ideal way to educate student teachers in community competence. A distinction was made between their views on the importance of community competence for the profession and their views on the role of teacher education institutes.

The *implemented curriculum* was analysed on the basis of interviews with teacher educators, group observations, and the logs of the electronic learning environments used by groups. As mentioned before, we may expect teacher educators not only to recognise the importance of community competence, but we also expect them to stimulate community competence development by organising collaborative activities, including activities focusing on reflection on and assessment of community competence development. Therefore, during our analysis we searched within the interviews for teacher educators' comments about the way they stimulate community competence, and categorised these statements into the three main categories: collaborative activities, reflection and assessment. The collaborative activities are configured within different group arrangements: mentor groups, subject matter groups, reflection groups, and research groups. The activities within these types of groups, together with reflection and assessment, have an important role in the curriculum. Student teachers present their reflections in electronic portfolios, which are used by the teacher educators as a basis for assessment. Comments about the electronic learning environment were also considered, as this turned out to be a means of teaching in addition to face-to-face meetings. In analysing the observations, we focused on if and how collaborative activities were performed. The discourses in the electronic learning environments were analysed in two phases. First, we determined what kinds of activities were visible in the environments. Next, the environment was searched for evidence of collaboration. Evidence of collaboration was defined as the following: (1) when a student reported a collaborative activity with a colleague or fellow student, which occurred face-to-face or in the electronic learning environment, or (2) when two or more students were engaged in a discussion about an experience, a problem, or a product.

The *attained curriculum* was analysed on the basis of interviews with the student teachers and their electronic portfolios. We looked at those parts of the interviews in which student teachers explicitly talked about their experiences of the curriculum in relation to the development of community competence. Also in this case, the statements of the student teachers were analysed and categorised on the three main categories: collaborative activities, reflection and assessment. The portfolios were searched for instances of student teachers describing a learning experience concerning community competence.

2.3 Results

2.3.1 Intended curriculum

To give an indication of the institute's intentions towards embedding the development of community competence within the curriculum, we give an overview of the visions and mission of the teacher education program, the heads of department and teacher educators. All institutes mention the development of community competence in the mission statement within the study guides. As a result, we infer that they define the concept as important. However, they barely explain how community competence is implemented in the curriculum. It appears that the development of community competence is weakly conceptualised within these curricula.

For example, the study guides of two institutes mention that a teacher should be able to collaborate with his/her colleagues. Concerning how they have to learn to collaborate, the three institutes mention roles in which community competence is expected to be acquired, namely “teacher outside the class”, “teacher as a colleague and team member”, and “teacher as a member of the school organization”. According to the study guide of one institute, these roles are covered in the mentor groups and theme meetings; in the second institute the role is tackled in the mentor groups and in the portfolios and in the third institute, it appears that student teachers should develop community competence as a home study activity. There is no elaboration on what these roles entail or what exactly the student teachers learn during the mentor groups, theme meetings, internships or home study activities.

Regarding the vision of teacher educators and heads of department the majority of teacher educators and heads of department stated that collaboration was important for teachers, or even necessary in the teaching profession. An example of such a statement is the following: “If a teacher is not able to work with others, learn with others, then you have a big problem. I find that pretty obvious”. Additionally, the majority of the educators (6 of 8) and one head of department we interviewed about the role of the teacher education stated that the teacher education institute should be a place where collaboration between student teachers and community development is stimulated. By contrast, two educators were not convinced that the teacher education institute is the place for student teachers to develop community competence. One teacher educator was convinced that it was necessary for student teachers to develop professionally in a way that is in accordance with their personality, meaning that if they do not wish or are unable to collaborate, the teacher educator did not intend to encourage collaboration. The other teacher educator stated that the development of community competence should have taken place in the master's

programme which the students followed previously, and therefore no longer needed to be a focus within teacher education.

2.3.2 Implemented curriculum

To distil the way in which the development of community competence is implemented within the curriculum, we will discuss in this section which activities are undertaken to stimulate community competence development, including reflection activities and assessment procedures. Because there are several differences between the four groups arrangements in the teacher education institute (mentor group, subject matter group, reflection group and research group), the characteristics of the different group arrangements are summarised in Table 2.2.

The majority of teacher educators state that they stimulate the development of community competence throughout the four group arrangements. In the mentor, subject matter en reflection group, the teacher educators state that they organise collaborative activities for the student teachers to stimulate community competence development. In the research group, collaboration is stimulated but student teachers are also allowed to carry out their research individually. However, the intention of the teacher educator to organise collaborative activities was not always visible in our observations or in the use of the electronic learning environment.

In the mentor and reflection group, we observed a lot of interaction between student teachers to discuss problems and questions and to give feedback on each other's products. However, in the subject matter group, we observed that the teacher educator played a central role in the classroom by providing a lot of individual tasks or tasks to perform in pairs. Also the electronic learning environment lacked signs of collaboration. The electronic learning environment is mainly used as an information tool. In the few instances in which the electronic learning environment is deployed as a collaborative environment, the teacher educator played a central role in stimulating student teachers to use the environment in a collaborative way.

Table 2.2

Characteristics of teacher education group arrangements

Group	Number of student teachers	Goal	How is collaboration stimulated?	Activity of teacher educator	Use of ELE (electronic learning environment)
Mentor group	15-25	Big picture of being a teacher	All teacher educators said they gave tasks requiring collaboration	Mostly communication between teacher educator and student	7 of the 8 groups used an ELE, of which 3 used it as a collaboration tool
Subject matter group	3-40	Content- related issues, procedures and methods	Five of eight teacher educators said they stimulated collaboration by setting collaborative tasks.	Not much communication between teacher educators and students or between students themselves	Mostly for information, 2 groups used it as a collaboration tool
Reflection group	3-4	Exchange experiences	Teacher educators said full collaboration was inherent in the group	All teacher educators provided the students with methods to exchange expe-riences. 3 were present and active as chairmen or participants, 2 provided help when needed, 2 were not present at all	2 groups used it as a collaboration tool to prepare the reflection group
Research group	Some individual, some in groups of 3-4	Performing practice-oriented research	All teacher educators stimulated conducting research in groups, but individual research projects were allowed	One teacher educator supervised the collaboration within the groups	Everybody used the ELE to reflect on each other's projects

Next, we will further elaborate on the specifics of the different groups. First, the *mentor groups* were groups in which student teachers worked on their own professional development as teachers. Most importantly, all five teacher educators responsible for such a group said that they stimulated community competence by setting collaborative tasks. The exact way in which they stimulated collaboration differed; three said they only used the "teach what you preach" method by collaborating with other teacher educators; one organised team-building activities and put verbal emphasis on the importance of collaboration; and one teacher educator used all three of these strategies. In accordance with the results of the interviews, we saw during our observations of four mentor groups

that in three of these there were many opportunities for student teachers to discuss problems and questions, and to react and give feedback on each others' products. In one mentor group, there was much collaboration between the teacher educator and individual student teachers, but less between student teachers. The electronic learning environment of the mentor groups shows a less positive picture of how the development of community competence is implemented within the curriculum. We found that seven mentor groups used it and one did not. Only three of these, however, were very active in their use of the ELE as a collaboration tool. These had an active teacher educator who stimulated the discussion by posting regularly. In one of these groups, the student teachers were obliged to react on each other on a regular basis.

Second, the *subject matter groups* were groups in which student teachers followed subject-specific courses. These groups were concerned with content-related issues, methods, and procedures. First, five of the eight teacher educators interviewed about this group said that collaborative activities were undertaken in these groups. On the other hand, during the observation of two subject matter groups, we saw that the teacher educators played a central role in the meetings. The student teachers usually had to perform tasks individually or in pairs. In addition, most subject matter groups used the electronic learning environment mainly as an information board, and only two educators tried to use the ELE as a collaboration tool in which the student teachers were obliged to contribute to the discussion forum. Although the teacher educators were closely involved and reacted regularly to the postings of the student teachers, the student teachers rarely reacted to each other.

In the *reflection groups*, the student teachers exchanged learning experiences. All nine teacher educators we interviewed about this type of group said that they gave the student teachers a reflection method which they could use to talk about their experiences. Seven teacher educators added information about their presence and role as an educator. With regard to their presence during the collaborative activities, two teacher educators reported they were not present at all during the meetings. Three said that they were present and active during the meetings; sometimes as participants only, sometimes as chairmen. Two did not participate in the meetings but were present in the classroom in case the student teachers needed help. With respect to the supervising activities of the teacher educator on the collaboration, two of them reported that they asked their students to post their experiences on the electronic environment of the mentor group or in the electronic portfolio in advance, and to react to each other's experiences. Five teacher educators also followed the collaboration within these groups afterwards; four asked for a report on the meetings to be put in the portfolio, and one teacher educator asked student teachers about the process of these groups on a regular basis in the mentor groups. In addition to the descriptions of the teacher educators, from the observation of a reflection group we found

that student teachers interacted a great deal with each other and provided their group members with feedback on their experiences.

The last type of group was the *research group*, in which students were expected to carry out a research project. With regard to the development of community competence in this type of group, all eight teacher educators who had experience with these groups said that collaboration in conducting the research project was stimulated, but they did allow student teachers to perform their projects individually. They reported that when student teachers collaborated in conducting research, the collaboration was predominantly on a meta-level. A teacher educator explained: "What we want in the collaboration here is to keep each other focused, to help each other in formulating the research question, in executing the research plan, and in monitoring the time path". Another teacher educator observed: "Most students kept each other posted on their planning, some did the same subject, and a few shared their data". One teacher educator said that she supervised the collaboration by asking her students how they collaborated, what they learned about it, and what added value this collaboration had for their research projects. Furthermore, we found that, with regard to the electronic learning environments, all research groups in each institute used the same environment and were asked to give feedback on each other's projects.

The second aspect we looked for in the interviews was whether the teacher educators specifically organised *reflection* activities to stimulate community competence development. Although most teacher educators stated that they stimulate community competence through collaborative activities, there was considerable variation between teacher educators in whether their students had to reflect on their development of community competence, either in a general way in their portfolios or about specific group processes after working in a group. It also depended on the level of the student teacher at the beginning of the project, as the following quotation exemplifies: "If I think it is difficult for a student I am more likely to ask him to write something about collaboration than students who already do it [collaboration] easily." While three educators asked the student teachers to reflect regularly on the process in the groups at the institute, one educator only intervened when conflict arose.

The last aspect relevant in determining whether teacher educators stimulate the development of community competence is whether and how this competence is *assessed*. On the basis of the interviews we can conclude that there was no consensus on how the development of community competence should be assessed. This is illustrated in the following quotations: "There is no final attainment level for this competence." "This assessment is very difficult; it is very subjective". Five teacher educators said that, as a consequence, community competence was not assessed explicitly. Two of the six teacher educators stated that although there were sometimes problems with the community

competence of student teachers, it was not a reason to withhold a teaching certificate. One of them explained this as follows:

> When it comes to the point that I have to withhold a certificate, then I notice that this [community competence] is always one [aspect] that I do not take into account in my judgement. If that judgement is discussed, you look for more evident things.

2.3.3 Attained curriculum

We report on the attained curriculum by clustering the results of the different types of data (interviews with student teachers and electronic portfolios) around the same topics that we used to discuss the implemented curriculum: first, we discuss the activities to stimulate the development of community competence, followed by a discussion of the reflection on and assessment of community competence.

The student teachers gave a slightly different view on the possibilities to collaborate with each other than the teacher educators. The majority of student teachers stated that there were many opportunities to collaborate with their fellow students throughout the four group arrangements. They particularly liked the occasions when they exchanged experiences and felt their problems were recognised by other student teachers. A student teacher formulated this as follows: “It is nice to hear that it is the same for the other (students), that others also have the same problems. We all have the same issues and it is nice to talk about these”.

However, the student teachers also had critical remarks on the collaborative activities in the curriculum. For example, three of the six student teachers who reported on the subject matter groups, explained that it was not common to collaborate in these group. Much depended on the teacher educator of that specific group. Additionally, four student teachers reporting on the reflection groups explained that although the idea of exchanging experiences was useful, the way in which they had to do it was less than optimal. Their main problem concerned the methods they had to use to talk to each other. Without a teacher educator being present during the meetings, it was difficult to stick to these methods and to talk about their experiences on a higher level. A student teacher described it as follows:

> It is no better than the conversation I have with my fellow students in the pub. I do not think it is a disaster, but it should be stricter. It is just going wrong in the implementation phase. I think that during the meetings there has to be someone around to ask questions. Now it is left a bit to personal choice. We did it once with X [teacher educator]; then it went great.

Finally, four student teachers reported they collaborated in the research groups, although this was not compulsory. They chose to collaborate for pragmatic reasons, such as the fun of collaborating with friends or a lack of inspiration in choosing a topic.

As we now know how collaboration was perceived by student teachers in the four types of groups, we will turn to how they perceived the *reflection* which they were required to undertake. It seems that there are no official guidelines concerning reflection activities. Six student teachers reported only individual reflection activities and one student teacher mentioned having to reflect within a group at the institute on what they did together and what they found difficult in this collaboration.

These different perspectives on reflection between students are also visible when we consider the content of their portfolios. In the 46 portfolios we investigated, 41 student teachers mentioned instances in which they encountered colleagues in collaborative contexts. These reports, however, remained on a very descriptive level: for example, "I have got involved with other teachers and attended the new teachers' drinks party on 31 October and eagerly engaged with other members of staff". Only 24 portfolios included reflection on collaboration with colleagues. Collaboration with fellow student teachers hardly appeared in these portfolios, and if it was included it was briefly and only descriptively.

Concerning the *assessment* of the development of community competence, the student teachers showed the same confusion as the teacher educators, confirming that there was no consensus on how the community competence should be assessed. All seven student teachers that we interviewed about the assessment of community competence found that it was not very transparent. Furthermore, they reported differences between teacher educators and groups in this area. Two student teachers said that the assessment by their teacher educator was quite strict, whereas the other five felt it was quite lax, or did not even know for certain if their teacher educator had ever looked at their portfolios. This is illustrated by a quote from one student teacher about writing a report on his reflection group: "You have to do it, but they do not check it. If you do not do it, you have to deal with it yourself".

2.4 Conclusion and discussion

We investigated the extent to which three postgraduate teacher education institutes in the Netherlands pay attention to and aim at stimulating the development of community competence. This question was approached through three curriculum representations. It appears that in the intended curriculum community competence is found important, but in the implemented and especially the attained curriculum, the development of community competence receives less attention.

Looking at the intended curricula of the teacher education institutes, we found that the development of community competence was considered to be an important topic in the programmes. The study guides revealed that all institutes in some way or other stated the importance of developing community competence by their student teachers. This is in line with the descriptions provided by the teacher educators and heads of department, which show that almost all deemed it important for student teachers to develop community competence. At the same time, community competence was weakly conceptualised within the study guides.

This weak conceptualisation was also apparent in the implemented curriculum, where the importance denoted by teacher educators in the intended curriculum was not systematically reflected in their own descriptions of their actions. Teacher educators reported that they paid attention to community competence in the sense that they organised different collaboration activities. At the same time, only a few teacher educators said they stimulated reflection on the development of community competence. Most teacher educators believed that community competence was adequately developed by taking part in collaborative activities. Additionally, most teacher educators stated that community competence was not given explicit attention within the assessment procedure, and for two teacher educators a certain minimum level of community competence was not necessarily a requirement for receiving the teacher's certificate. This lack of systematic assessment of the development of community competence is probably related to the fact that community competence was weakly conceptualised in the study guides. From observations and examination of the electronic learning environment we found that there were many differences between the teacher educators in how they implemented community competence both face-to-face and in the electronic learning environment. In the meetings, some teacher educators played a very active role in stimulating student teachers to collaborate, whereas others did not. With regard to the electronic learning environment, differences were even greater, as some teacher educators did not use it at all, while others used it very intensively and as a real collaborative tool.

The attained curriculum further complicates the picture. Student teachers said that there were opportunities to collaborate within the programme, especially in the mentor, subject matter, and reflection groups, but there were differences in how much they appreciated this. The opportunities to share experiences were mostly highly valued, but much depended on the presence or absence of the teacher educator. In the portfolios we observed great differences in the amount of attention that student teachers paid to describing their learning processes concerning community competence, and in the depth of reflection on this topic.

Our findings are a more nuanced version of the statement of Beck and Kosnik (2001) that teacher education is still very individualistic. We found that the study guides, teacher educators, and heads of department all underlined the importance of the development of community competence in the intended curriculum, but the conceptualisation of this concept in practice was weak. Concerning the implemented and attained curricula, teacher educators, student teachers and the materials showed that there was no systematic and explicit policy for stimulating the development of community competence of student teachers. A consequence of the above-described practice of teacher education institutes is that student teachers do not systematically learn how they can benefit from collaboration with colleagues and fellow student teachers, and they do not intentionally learn how to reflect on their own community competence. When they begin to work in schools after completing their educational programme, this may prevent them from contributing to, as well as benefiting from, teacher communities. Although the effect of participating in communities on the teaching performance of the teachers or the learning process of the pupils is not straightforward, it is obvious that contemporary teaching practice demands collaborative teachers with sufficient community competence. As this was acknowledged and addressed in the intended curriculum of the three teacher education institutes, it was relevant to study if and how this was conceptualized, operationalised and experienced at the implemented and attained curriculum levels.

This study was conducted in three representative teacher education institutes in the Netherlands. As noted above, in teacher education in the Netherlands, the intended curriculum is defined by the views of the teacher educators and heads of department. We wonder whether the variance in the implementation of educating towards community competence in different curriculum perspectives is smaller in other countries, where the curriculum is defined and supervised by the government (Swennen, Volman, & Van Essen, 2008). It would also be interesting to investigate how student teachers acquire community competence during teacher education, in order to determine at which points this development can be stimulated within the programme. Additionally, with the evolution of teacher education towards professional development schools, another interesting question is whether and how these school-institute partnerships can stimulate the development of community competence and communities in student teachers' daily practice in school.

Given that the concept of communities is frequently used in the educational literature (Newmann & Wehlage, 1995; Grossman, Wineburg, & Woolworth, 2001; Little, 2003; Hammerness, Darling-Hammond, & Bransford, 2005), it is interesting to see that teacher education is struggling with the conceptualisation and implementation of community competence. At the same time, it appears from the findings of our study of the intended curriculum that the development of community competence is deemed an important component of the teacher education curriculum. We believe that there are

currently opportunities within teacher education programmes to stimulate the development of community competence more explicitly that are left unexploited. A possibility for optimising the level of attention given to community competence can be found in an explicit design focusing on learning to collaborate and acquiring community competence. We believe that all types of groups discussed in this paper can be fruitful environments for this, but especially the mentor and reflection groups, as these have the inherent goal of learning to collaborate. In all groups the electronic learning environment can be used much more for collaboration. The design should include guidelines for teacher educators, not only for using collaborative activities, but also for stimulating reflection on these activities. These reflective activities can be performed both in groups and individually in the portfolio. For both of these activities, student teachers should be given tools to help them in reflecting on their community competence. Teacher educators can then use these reflections in their assessment of student teachers' community competence. Only when aims concerning the development of community competence at the intended curriculum level are operationalised, assessed, and experienced at the implemented and attained levels, can a teacher education programme be considered to pay sufficient attention to those key factors of teacher competence.

Chapter 3

Developing designs for community development in four types of student teacher groups[3]

It is becoming increasingly important for teachers to collaborate. Teacher community is found to be a fruitful notion to think about improving collaboration. Teachers can be prepared for working in such communities during teacher education. We examined how the practice of collaboration within different types of groups in teacher education can be optimised, aiming at an improvement of the shared domain, group identity and shared interactional repertoire of these groups. We included four types of groups: subject matter groups, research groups, mentor groups and reflection groups. Focus groups with teacher educators, student teachers and community experts were conducted to gather ideas for the improvement of the institutional design for community development. Combining these ideas with the research literature, we formulated a list of potentially relevant and desirable design principles for each of the types of groups. In conversations with teacher educators, the viability of these principles was reviewed, resulting in particular sets of design principles for each group. These sets consist of principles that were already visible in the way in which the teacher educator organized the groups as well as principles that are completely new to the groups. The design arrangement for the mentor group consists of the most design principles, while least principles are applicable to the research group. The procedure used in this study can serve as an example of how to create a design aimed at the development of student teacher groups as social and collaborative learning environments.

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3.1 Introduction

Historically, teacher education programmes, both in the Netherlands and elsewhere, have relied on competence-based models as the backbone of the curricula (Stichting Beroepskwaliteit Leraren, 2004; Whitty & Willmott, 1995). These models start with the observation of teaching practices, follow with the determination of a set of competencies required for teaching, and conclude with the design of a curriculum to address the appropriate competencies. Assessments are aimed at determining whether student teachers have acquired the desired set of competencies (e.g., by means of student teacher portfolios). Clearly, this model reflects an intentional effort to align teacher education programmes with professional practice.

At the same time, this approach risks neglecting consideration of how professionals execute their jobs, that is, the implications of the socio-cultural contexts in which their work is being shaped and developed. According to Saunders (2006), this latter issue has been emphasised more strongly by institutional designs using the concept of communities of practice. This concept describes working and learning as processes located in the context of particular social groups rather than understanding them as individual processes only. We assert that being able to work in communities of practice is therefore an additional competency of a professional teacher. This research addresses questions of how one can work in communities within teacher education as preparation for working in the communities found in professional practice.

3.1.1 Groups in teacher education

In our previous study, we explored the practice of collaboration within Dutch teacher education programmes on university level. We observed that current group structures are not explicitly or systematically organised by all teacher educators with the goal of creating a valuable, collaborative, and professional learning and working environment for student teachers (Chapter 2). We observed four different types of groups in which student teachers interact and collaborate. The group types were *mentor groups*, in which student teachers learn about general educational topics; *subject matter groups*, in which student teachers learn how to teach their specific subject; *research groups*, in which student teachers collaborate around a small-scale educational research project; and *reflection groups*, in which student teachers reflect on their experiences at school. Each student teacher was involved in each of these types of groups, but the composition of the groups differed, as

they were formed around different topics, for example, subjects or research topics. The groups differed with respect to their educational objectives, activities, conditions, tools, products, and numbers and roles of participants. In other studies on teacher education it is also noted that different types of groups are employed, though not always the same types as we distinguish (e.g., for groups that resemble subject matter groups and mentor groups see both Bullock, Park, Snow, & Rodriguez, 2002; and Kim, Andrews, & Carr, 2004; for groups resembling subject matter groups and research groups, see Bianchini & Cavazos, 2007; for groups resembling reflection groups, see Jay & Johnson, 2002; for a different type of group, namely student teachers learning together with teachers in a school-based group, see Korthagen, Loughran, & Russell, 2006).

These types of groups within the teacher education programme can be seen as valuable learning environments in preparation for the profession, as they are similar to some of the many different types of groups that can be found within schools where teachers will ultimately work (for a description of various types of groups in school, see Little, 2003). The mentor groups in the teacher education department are similar to what Pounder (1998) calls 'work groups' in schools. This type of group is "designed to increase members' responsibility for the group's performance and outcomes, creating work interdependence and opportunities for self-management" (p. 65). Groups like the subject matter groups are also discerned in literature about schools, for example, in "subject matter inquiry groups", during which teachers are students of their own discipline (Westheimer, 2008). With respect to research groups, Westheimer (2008) discusses "teacher research" in which teachers collaborate "to examine their own practices, collectively study research done elsewhere, and challenge their own assumptions about teaching, strategies, students, and broader educational policy issues" (p. 763). Reflection groups are similar to schools' "discourse communities on teacher reflection", where "teachers engage in and share their reflections in diverse ways" (Hoffman-Kipp, Artiles, & Lopez-Torres, 2003, p. 251).

Being involved in different types of groups during teacher education helps to prepare student teachers for the collaborative work environment in their profession such as communities and might also contribute to enhancing the quality of these. However, we noted in our previous study that the groups in teacher education are not explicitly or systematically organised as yet. Consequently, the group structures function only as organisational structures in which specific tasks and assignments are carried out, rather than such groups being purposefully organised as a developmental context in which to learn how to be a collaborating professional (Chapter 2). As such, the opportunity might be missed to, next to the other goals of teacher education, also prepare student teachers for the collaboration required in schools. It is our intention to reconsider the four types of groups that we found within the Dutch teacher education programmes from the perspective of teacher communities. This means that we perceive each type of group as a potentially

relevant and unique learning environment in light of professional collaborative practices. Accordingly, we question in what ways the different groups should be designed so that they can bring about the intended value as social and collaborative learning environments, which we see as both contributing to the individual team members competence and to the development of the group as a whole. This study describes the design process that resulted in sets of design principles aiming at improving the four types of groups from the perspective of community, as a way to prepare teachers for their role as collaborative colleagues at school. We will continue with a discussion of teacher communities as the key variable in our study and after that describe our stance with respect to the method of design research. Then we will formulate our specific research question.

3.1.2 Teacher Communities

In our previous study (Chapter 2), we found that one of the competencies that student teachers are supposed to acquire is the ability to collaborate with colleagues. However, within teacher education curricula and assessments, not much attention is devoted to the social practices in which teachers engage and within which teachers accomplish and make sense of their work. This omission stands in contrast with current conceptualizations of learning in educational research and practice in which learning and working are perceived as participation in situated practices (Brown, Collins, & Duguid, 1989; Lave & Wenger, 1991). This inherently involves others who inspire and motivate one's thoughts and actions in particular directions. Along with this idea, various specific concepts of community have emerged, most notably communities of practice, communities of learners, and learning communities (Roth & Lee, 2006). All of these concepts imply some sort of practice that people share. The notion of communities has also started to receive attention in studies of the teaching profession (Grossman, Wineburg, & Woolworth, 2001; Little, 2003; Volman, 2006).

In preparation for working in communities of teachers in schools, we, along with other researchers (Barab, Barnett, & Squire, 2002), consider it valuable for student teachers to participate in community-like groups already *during* their educational programme. Participating in such groups can offer student teachers a shared practice in which they learn and work together with others, much in the same way as they do within schools. In terms of competences, this allows them to develop what we call *community competence*, that is "the ability to establish, maintain and develop relationships with other professionals as a basis for a professional learning and working culture in the school" (derived from a definition of social competence in the context of communities by Admiraal, Lockhorst, Beishuizen, & Pilot, 2007, p. 64). Such community competence enables beginning teachers to work as socially engaged professionals once they enter the profession.

In creating design principles for communities in teacher education, we start with the notion of teacher communities, as this provides us with a perspective from which to organise these types of groups. Based on a literature review and mostly building on the work of Bellah, Madsen, Sullivan, Swidler, and Tipton (1985); Grossman, Wineburg, and Woolworth (2001); and Wenger (1998), Admiraal, Lockhorst and Van der Pol (in press) have defined a teacher community as, *"a group of teachers who are socially interdependent, who participate together in discussion and decision making, and share and build knowledge with a group identity, shared domain and goals, and shared interactional repertoire*". They define the first dimension of community, *group identity*, as "mutual engagement that binds teachers together in a social entity". The second dimension, *shared interactional repertoire*, is defined as "shared practice of and beliefs on how teachers in a group interact". Finally, the third dimension of communities, *shared domain*, is defined as "a joint enterprise as understood and continually negotiated by its members" (Admiraal, Lockhorst, & Van der Pol, in press).

By applying the notion of teacher communities to the context of teacher education, the communities come to have a specific educational function. Communities with such a function are often called "learning communities" (e.g., Roth & Lee, 2006) or "bounded learning communities" (Wilson, Ludwig-Hardman, Thornam, & Dunlap 2004). They are bounded because they are positioned within a curricular framework that defines expectations of participation and determines the timeframe. Also, the participants are not free to choose community members. Despite these restrictions, Wilson et al. (2004) argue that the notion of community is a valuable perspective for expanding educational programmes. First, communities can fulfil a bridge function between school and work environments. Second, the concept allows consideration of how one can create social contexts within which students feel more connected with each other. Looking at existing groups with this concept in mind entails exploring how group identity, shared interactional repertoire and shared domain can be further stimulated. Wilson et al. (2004) formulated specific strategies for community development specifically when it concerns bounded learning communities. These strategies were derived by reviewing literature on communities (e.g., Barab & Duffy, 2000; Scardamelia & Bereiter, 1994; Wenger, 1998) and interpreting what activities are relevant and realistic in an educational programme.

3.1.3 Design principles for community development

The fundamental basis of any design process should be the communication and negotiation of perceptions and opinions by the people involved, or stakeholders, and a researcher (The Design-Based Research Collective, 2003; Visscher-Voerman & Gustafson, 2004). In designing for community development in teacher education programmes, the relevant

people to involve are teacher educators, student teachers, and experts on teacher or other communities. Using their knowledge of current practices in teacher education, teacher educators and student teachers are able to determine what is relevant and viable when making changes to an educational programme. In addition to teacher educators and student teachers, experts with experience in teacher or other communities can provide expertise for specific types of teaching groups.

In this study, we aimed at questioning these three different groups of stakeholders regarding *propositions*, that is, their ideas about the improvement of institutional designs to promote community development, as described in the form of general guidelines. However, appropriate designs should not only be based on the opinions and perspectives of the people involved, but also make use of theoretical literature (diSessa & Cobb, 2004). Since the communities that we are considering are bounded learning communities, as described above, the *design strategies* proposed for bounded learning communities by Wilson et al. (2004) are most relevant for the intended designs.

When we combine the propositions of stakeholders and the design strategies from the literature, it becomes possible to formulate a set of potential design principles for each type of group. A *design principle* is defined as a means towards a specific end (Van den Akker, 1999). Hence they can have the form of "if–then" statements. An example would be, "By monitoring and leading discussions, students learn to perform leadership roles in a group". Such a list of design principles can be used as a basis for formulating final sets of design principles for the various groups.

A consistent finding in the educational design literature is that educators have a large influence on the implementation of a design (Collins, Joseph, & Bielaczyc, 2004). Therefore teacher educators should be participants in the last stage of the design process as well. In this final stage, principles that are not realisable in the context of the group need to be excluded. This review with teacher educators, in their position of change agents, prevents the resulting set of design principles being neglected or poorly implemented.

Taking all of the above into account, the primary research question of this study asks the following: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of group in teacher education?* Identifying these sets of design principles allows us to ultimately implement better designs for the specific groups, so that student teachers will be better prepared to work in teacher communities.

This research question can be broken down into four secondary, specific questions. First, what is the current collaborative nature of existing types of groups in teacher education? Second, what are propositions for community development in each of these types of groups according to teacher education stakeholders and experts on communities? Third, what design principles can be formulated for each of the groups, based on the

propositions of stakeholders and the design strategies proposed from the existing literature on bounded learning communities? Fourth, which sets of design principles are deemed viable according to teacher educators?

3.2 Method

3.2.1 Context

This study was conducted at two university teacher education institutes in the Netherlands, which were selected because they are among the largest institutes in the Netherlands. They each host about 150 student teachers a year with a team of about 30 teacher educators. Student teachers entering the programme already have a master's degree in one of 18 or 19 school subjects. The teacher education program lasts for one year full time (or two years part time), during which student teachers spend half of the week on institute-related activities and the other half gaining experience at a school. This experience can be acquired either during a paid job or an internship. Their education includes meetings at the institute as well as individual activities like writing a portfolio about their development. All student teachers participate in all four types of groups mentioned previously, namely mentor, subject matter, research and reflection groups. At school, students start with observing other teachers and later on practice teaching themselves. Student teachers are assessed based on their learning process at school and based on their portfolio, in which they are required to reflect on their experiences at both school and the institute.

3.2.2 Data collection

We collected data during focus groups (Bruseberg & McDonagh-Philp, 2001) with teacher educators, student teachers, and experts, as well as during design meetings with (groups of) teacher educators. The data collection process for each group of subjects is described in Table 3.1.

The teacher educators from two different institutes were selected based on their interest and expertise in developing groups in teacher education. The student teachers were asked by their educators to participate on voluntary basis. The experts were asked to participate based on their known expertise in the field of teacher communities or communities in general. We collected video or audio recordings from each focus group, which were fully transcribed. From the meetings with teacher educators, we took notes and created reports that were verified by the educators themselves.

Table 3.1

Overview of the data collection process

Subjects	Domain covered	Method	Type of data	Number of meetings	Number of participants (in total)
1. Teacher educators	Current and ideal pedagogy	Focus groups	Video/audio	2	10
2. Experts on communities	Ideal communities	Focus group	Audio	1	6
3. Student teachers	Teacher education practice	Focus groups	Audio	2	9
4. Teacher educators	Teacher education practice and pedagogy	Design meetings	Member (educator) verified reports	4	7

3.2.3 Procedure

We will begin with a generic overview of our procedures and then discuss each step in more detail. We started our analysis by determining the existing collaborative nature of each type of group based on input from the teacher educators, as we wanted the designs to be compatible with the groups as they were. After that, we asked the teacher educators, experts on communities and student teachers to provide propositions to improve the groups during subsequent focus groups.

During the first focus group meetings, one at each of the two teacher education institutes, teacher educators were asked to discuss both the current nature of the four groups and the ideal nature of these groups when considering them as student teacher communities (see Table 3.1, first row). A short introduction was provided to explain our vision of the concept of community. For the inventory of ideas on the ideal teacher education pedagogy, a hypothetical case of desired improvement from the perspective of a teacher educator for each type of group was provided (see Appendix 1 for an example). Following their reactions on these hypothetical cases, they collaboratively discussed how the design of each group could be altered in order to stimulate community development.

During a second round of data collection, we organised a focus group with six experts on communities and teacher education (see Table 3.1, second row). This focus groups was a collaborative initiative with two other researchers, and therefore not only discussed the improvement of student teacher groups in teacher education (this study), but also improvement of teacher communities in school and school-university partnerships. We started the focus group with a discussion of participants' ideas about how teacher

communities could be supported in general. After that, the six participants were grouped in pairs and were asked to think about how to enhance different types of groups in different contexts in terms of community development. For this study, only the discussion of the pairs that focused on teacher education improvement was relevant. The results of the three conversations were inventoried, presented, and discussed so that all participants were given the chance to react and provide input on the proposals.

Following, we organised two focus groups with student teachers (see Table 3.1, third row), during which we asked them to reflect on the relevance and practical viability of the proposals that had resulted from the first and second focus group. They were given cases (see Appendix 2 for an example) that included proposals from the teacher educators and experts, which they discussed as a group.

Based on the analysis of all three focus groups in combination with literature, a total of 28 design principles were discerned, ascribed to the groups in different constellations. To determine the practical value of the sets of design principles for each type of group, we held four meetings with teacher educators or groups of teacher educators, one meeting for each type of group and a total of seven educators (see Table 3.1, fourth row). They were given a set of design principles and commented on the relevance and attainability of each of those principles for their specific group. This reduced the total number of design principles to 26. This last step was employed to both create viable sets of design principles for the specific groups as well as to validate the interpretations by the researcher in the previous step.

3.2.4 Data analysis

We used qualitative content analysis (Krippendorff, 2004) for all data sources. Several categories that are commonly used in literature (cf. Koper & Olivier, 2004; Van den Akker, 2003) were distinguished that allowed us to describe how each of the groups could be ideally organised. These categories were educational objectives, activities, conditions, tools, products, number of participants, and role of participants. Educational objectives are defined as the goals the participants are supposed to acquire in the groups, such as learning to value each others' expertise. The category of activities encompasses the methods used to achieve the educational objectives, for example, student teachers discussing what they want to learn from each other. Conditions include the prerequisites needed to achieve the educational objectives for a specific group or activity, for example, a safe environment. Tools are defined as any material that can be useful during these activities, such as an electronic learning environment. Products are operationalised as the results of the activities, such as a reflection report. Role indicates the kinds of roles that student teachers and teacher educators can assume in the group. These categories were used to code both the

statements about the current situation from teacher educators (first specific research question), as well as to code the propositions for improvement provided by all focus group participants (second specific research question). In the single instance of disagreement within one of the focus groups we took the position of the majority.

A next step in the analysis was formulating design principles (third specific research question). Therefore, we first used the set of propositions of stakeholders (e.g., "Educators should stimulate equal contributions of student teachers") to select specific design strategies recommended by Wilson et al. (2004), (e.g., "using projects with multiple perspectives"). The design strategies allowed translating the propositions of stakeholders into more concrete interventions. Following, the intended mechanism of each of the design strategies was explicated. Doing so, we formulated design principles in the form of "if-then" statements, with "if" referring to the strategy and "then" referring to the intended mechanism (e.g., "By using projects with multiple perspectives, students get to know each others perspective"). Last, we indicated the outcome of these design principles in terms of community development. We did so by considering to which of the three dimensions of community development distinguished by Admiraal et al. (in press) they contribute. This stepwise process lead to a list of design principles for each group, categorised in three dimensions of community development[4].

A last step in the analysis was controlling for the viability of the set of design principles (fourth specific research question). As explained in the procedure, we asked teacher educators to evaluate the practical relevance and attainability of the design principles. In case of negative evaluation on the viability, we removed a design principle. From this discussion and the statements of the teacher educators in the first focus group, it also became clear which of the design principles were already inherent in current practices of these groups. A comprehensive example of the results of the steps of analysis will be given in the results section, starting from paragraph 3.3.2.

The quality of the data collection, analysis and synthesis of this study was assessed using an audit procedure (Akkerman, Admiraal, Brekelmans, & Oost, 2008). This audit focused on the linkages between the data sources. Each analytical step was audited by an independent researcher in order to corroborate the underlying decisions. During this audit, the auditor and auditee had several conversations in which the auditee provided additional information on the process that appeared necessary to understand the analytic procedure. This information is also included in the description of the procedure in this article. Based

[4] This procedure corresponds with the CIMO-logic (Context, Intervention, Mechanism and Outcome) used in design literature (e.g., Denyer, Tranfield, & Van Aken, 2008). In our case, the context are the four types of groups, the intervention and mechanism are described in the form of "if-then" statements and the outcomes are described in terms of the three community dimensions.

on all information provided and a scrutinisation of each step in data gathering and analysis the auditor concluded that the quality of the research process and analysis was visible, comprehensible and acceptable (reliable and valid).

3.3 Results

First, we present information from the assessment of the qualities of the four types of groups as they were when we began. We then describe how the set of design principles developed during the subsequent focus groups and design meetings. Finally, we present the resulting set of design principles for all four groups and discuss each of these sets in more depth. We are not able to discuss the findings of all of the groups, so sometimes we will illustrate using one type of group as an example.

3.3.1 Existing situation

Our first specific research question was: *What is the current collaborative nature of different types of groups in teacher education?* In Table 3.2, the existing situation of the four types of groups is described, based on data from our previous study (Chapter 2) and on descriptions from the teacher educators of the first focus group.

As becomes clear from the descriptions of the four groups throughout the various categories, the nature of each of the groups is very different. Their distinctive natures seem to follow from the specific educational objectives of each group, with consequential foci in the other categories. From Table 3.2 it becomes apparent that for both the mentor group and the reflection group, learning to collaborate is an explicit objective, while for the subject matter and research groups it is not. Accordingly, the activities of the first pair of groups involve exchanging practices, giving feedback and reflecting on experiences. The second pair of groups is more concerned with addressing specific topics, and also uses theory as a tool to accomplish their goals. Another distinction exists between the mentor and subject matter groups at the one hand, in which a teacher educator is present at meetings, and the reflection and research groups at the other hand, in which student teachers collaboratively control the process. The first two groups have the educational objectives of connecting theory and practice and developing vision, while the other two have objectives that are directly related to the their work in schools, in particular, reflecting on school experiences and carrying out a research project in school. Although both the reflection group as well as the mentor group are reflecting on experiences, within the reflection group this is the core activity, while in the mentor group it is only part of many different activities.

Table 3.2

Existing situation of four group types within teacher education

Group	Educational objectives	Activities	Conditions	Tools	Products	Number of participants	Role of student teachers	Role of teacher educator
Mentor group	Secure home base; learn to collaborate; give feedback on experiences; connect theory and practice; model teaching; reflect; create a vision on teaching	Exchanging, collaboration, practicing, discussion of theory, reflection	safe atmosphere, working in homogenous group, social competence	Strategies for exchange of experiences	No products	8–16	Participants	Leads the process, is a model and stimulates the student teachers
Subject matter group	Develop vision and practice on the subject; exchange perspectives on subject teaching; combine theory and practice; test methods	Modelling, exchanging practices, developing teaching material	Safe atmosphere and social competence	Literature, models	Lesson plans, teaching material	2–40	Participants and colleagues	Leads and monitors the process, stimulates activities of student teachers
Reflection group	Learn to reflect independently and give feedback on experiences; collaboration; create shared language	Reflection, giving and receiving feedback on experiences	Space and time, social and reflection skills, liking each other	Explicit reflection and discussion methods	Reports in portfolio	3–4	Collaboratively controlling the process	Not present at meetings, but helps with forming groups, giving structure and feedback
Research group	Learn how to perform educational research; studying an educational topic in depth.	Reading, planning, conducting research, writing an article	Space and time, liking each other, research skills	Literature, empirical data	Research article	2–5	Collaboratively controlling the process	Not present at meetings, but helps with giving feedback and keeping track of the groups

Moreover, the reflection group uses a very specific method for reflecting. For both the reflection and research groups, teacher educators stress the importance of having space and time to meet. They reason that, as they are not present at the meetings of these groups, more is left to the initiative of the student teachers, increasing the importance of space and time to meet.

Although collaboration plays a role within all of these groups, its application differs greatly. As a result, these differences should be taken into consideration during the process of the development of the design, which will be described below. We will present the step-by-step design procedure for, first, the collection of propositions in section 3.3.2, then the combining of the propositions with design strategies from the literature to create design principles in section 3.3.3, and finally the determination of each principle's viability according to teacher educators in section 3.3.4.

3.3.2 What do stakeholders and community experts think?

Knowing the existing characteristics of each type of group, we can now turn to the second specific research question, which is: determining which propositions might improve the community character of these types of groups according to teacher education stakeholders and experts on communities. This question is answered by combining propositions made during focus groups with stakeholders, including both teacher educators and student teachers, and experts on community. We lack the space for presenting the details on each group, and so chose to present the particulars on the mentor group, as an example of the systematic analysis that was done, because this group provided the richest data.

When thinking about how to improve mentor groups in terms of community development, our first stakeholders, teacher educators, argue that important educational objectives, in addition to the ones that already exist, are the creation of empathy and respect for each other, and the participants learning to value each others' expertise. Activities that could promote these objectives are individual reflection, reflection in groups, and meta-reflection; tools that could be used are jigsaw methods (specific cooperative learning techniques).

The community experts proposed that an important objective for further development of this group as a community is for student teachers to be willing to learn from one another. This can be achieved by having student teachers present their knowledge of good practices to each other, explicitly describe successes, and discuss what they want to learn from each other. The experts also argued that conditions for this additional objective and these activities should be that student teachers feel safe and valued.

The third group of stakeholders in the focus groups, student teachers, agreed with the experts that an important additional objective for this group should be that student

teachers be open to learning from each other. On the other hand, they disagreed with the teacher educators in that they did not perceive that learning to collaborate should be an educational objective per se for this group. They argued that they already knew how to collaborate when entering the programme. We decided to include learning to collaborate in the design, as we wanted to do justice to the emphasis the teacher educators placed on this objective. Student teachers suggested the activities of visiting each others' classrooms during lessons, discussing problems, and thinking and talking with each other about what they can learn from each other. The conditions to make these activities realistic to implement that were mentioned by student teachers were that they can choose groups for themselves, that they feel related to each other, and that the groups are not too large. The student teachers felt that an electronic learning environment, including Blackboard, e-mail, and chat, are practical tools to stimulate collaboration in this group. A useful product that they suggested was a reflection report on their learning process. These three focus group rounds provided us with many propositions in different categories, as is necessary during the process of creating design principles.

3.3.3 Combining propositions from focus groups with strategies from the literature

Knowing the propositions provided by the teacher educators, community experts and student teachers, we can now turn to our third specific research question, which is: *What design principles can be formulated for each of the groups, based on the propositions of stakeholders and the design strategies proposed from the existing literature on bounded learning communities?*

The propositions that resulted from the focus groups were used to select those design strategies as provided by Wilson et al. (2004) that would be helpful for each of the groups. This lead to a set of design principles aimed at improving shared domain, shared interactional repertoire and group identity of each group (see Table 3.3, first column). These principles are described in terms of an activity, which corresponds to the "if" part of an "if–then" statement, and an intended outcome, or the "then" part. An example would be: "by using authentic and meaningful tasks, students are more committed". We have, based on the positions of the stakeholders, created preliminary sets of these design principles for the four types of groups.

3.3.4 Viability of the design according to teacher educators

Having identified the design principles that are relevant for groups within teacher education, we can consider our last specific research question: *Which sets of design principles are deemed viable according to teacher educators?* We will again present the results for the mentor group as an example.

The preliminary set of design principles was discussed with the teacher educators of the four different types of groups, who commented on the relevance and attainability of the design principles and proposed concrete ways to implement them in their group. The resulting set of design principles for the mentor group is presented in Table 3.3 (second column); together with the sets for the other three types of groups. We will provide some examples that show how we came to include specific design principles in a set for the mentor group.

For the objective of "being willing to learn from each other" that was proposed in several of the focus groups, we anticipated, drawing from Wilson et al. (2004), that the activities of sharing one's own goals, exchanging personal information, and interviewing each other might be appropriate means. Consequently, we included these in the preliminary design as activities. The teacher educator of the mentor group argued that there was already attention to sharing goals within the first week of the programme, as is visible in Table 3.3. Concerning the exchange of personal information, she thought a good medium could be the electronic portfolio. Furthermore she thought student teachers could benefit from interviewing each other, which she wanted to include in the meetings. From the focus group with student teachers, one of the suggested activities was discussing problems, for which we included using debates and exchanging stories in the preliminary design. The teacher educator did not feel that debating would be a good activity in her group, because she felt that that was a too basic activity for her students. Exchanging stories seemed more appropriate according to the educator, during which she wanted to ask her students to discuss similarities and differences. This resulted in including 'exchanging stories', and removing 'debates' from the set of design principles for the mentor group.

Integrating the proposals from the different stakeholders with the strategies of Wilson et al. (2004), we developed four different sets of design principles for the four types of groups, which are presented in Table 3.3. These principles are target toward organising the groups in a way that enhances group identity, shared interactional repertoire and shared domain.

Table 3.3

Design principles indicated for each type of group

Design principles by dimension	Group type			
	Mentor group	Subject matter group	Reflection group	Research group
Group Identity				
1. By sharing profiles, students get to know each other.	+		+	+
2. By creating cyclical activities, student teachers get involved with the group.	0	0	0	
3. By using reminders, students continually feel part of the group.	+	+		
4. By using an up-to-date environment, students feel the group is alive.	0	+		
5. By exchanging stories, students detect similarities.	0	0	0	+
6. By interviewing each other, students get to know each others ideas.	+			
7. By using projects with multiple perspectives, students get to know each others perspectives.	+		0	0
Shared Interactional Repertoire				
8. By working in subgroups, student teachers get the opportunity to develop as part of a group.	0	0	0	0
9. By learning 'community skills', students learn specific behaviours relevant within a community.	+		+	
10. By monitoring and leading discussions, students learn to perform leadership roles in a group.	+	+	0	
11. By creating rules of engagement, students collectively determine how they should behave.	+	+		
12. By encouraging learners to engage in group activities, the interaction will be more diverse.	0	0		
13. By using tools for communication and self-presentation, more communication is possible.	+	+	+	+
14. By rotating different roles, students learn to perform several tasks within a group	+	+	0	
15. By using constructive feedback methods, students get more comfortable in giving and receiving feedback.	0	+	0	+
16. By learning to negotiate differences, students learn how to handle conflicts.	+	+	+	
17. By valuing each others contributions, students learn to reflect on own and others contributions.	+			
18. By making summaries, students learn to reflect on their meetings.		+	+	+
19. By mentoring each other, students learn to perform mentoring roles.			0	
Shared Domain				
20. By using authentic and meaningful tasks, students are more committed.	0	0	0	0
21. By discussing goals, mutual goals can be discerned.	0	+	0	+
22. By developing assessment rubrics, students learn to rate each others' social competence.	+	+		
23. By using open ended topics, students are stimulated to discuss viewpoints.	0	0	0	0
24. By collaboratively creating a product, students learn to value each others knowledge.	0	0		0
25. By inviting experts, the knowledge of the group is extended.	+	0		
26. By using jigsaw-like activities, the knowledge of the whole group extends.	+	+		+

Note: Underlined text is derived directly from Wilson et al. (2004).

"0" means: existing principle, "+" means: new principle

3.3.5 Educational designs for four types of community

Having answered our four secondary research questions, we can now turn to our main research question: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of groups in teacher education?* In Table 3.3, we present the resulting sets of design principles for each group. In this table we distinguish between principles that were already inherent within the group practices and principles that have not yet been applied. An empty section means that a particular principle was not deemed applicable to that group as it was not mentioned within the focus groups, or that teacher educators in the design meetings rejected them for their specific group.

The resulting set of design principles for the mentor group includes many of the design principles, 24 out of 26. Ten of these were already used within this type of group. The set shows that teacher educators consider this group to have some community elements already. Moreover, stakeholders judge this type of group to have the potential to include many more. Particularly when looking at the principles concerning shared interactional repertoire for this type of group, many principles that transfer responsibility from the teacher educator to student teachers are included. An example of that is the principle: "By creating rules of engagement, students collectively determine how they should behave". This principle clearly gives the student teachers themselves the responsibility for the ways in which they interact with each other. Also new principles are identified to stimulate the group identity, for example, "By interviewing each other, students get to know each other's ideas". This type of principle is expected to increase the social ties within the group.

Looking at the design for the subject matter group, 20 design principles were deemed appropriate, of which 8 were already used within this type of group. Like the mentor group, most new design principles for the subject matter group are concerned with the shared interactional repertoire of the group. This again has to do with transferring responsibility from the teacher educator to the student teachers, as well as with student teachers playing a more active role within the meetings. An example is the principle "By making summaries, students learn to reflect on their meetings". This principle would require student teachers to be more actively involved in the practice of the group, instead of merely attending.

In the reflection group, 16 design principles were identified as applicable to this type of group, 11 of which were already part of this group. The new principles to this group are also mostly concerned with the shared interactional repertoire. For example, "By learning 'community skills', students learn how to behave themselves in a community". The participants in this group already had very active and responsible roles as there was no

educator is present at their meetings, but this principle provides a specific interaction activity related to community.

Lastly, for the research group, 12 design principles were included into the set, of which 5 were already included in the practice of the group. Again, most new principles were identified as concerning shared interactional repertoire, for example, "By using constructive feedback methods, students get more comfortable in giving and receiving feedback". As no educator is present and student teachers in this group are concerned with delivering a product, in particular a research report, a more individualistic approach can be deployed, by which the collaboration process might become marginalised. Explicitly paying attention to the methods of providing feedback to each other can increase the attention to the collaboration process of the group members.

3.4 Conclusions and discussion

In this study, we tried to determine an appropriate set of design principles for four different types of groups within teacher education. We first answered four specific research questions that describe the different steps within the research process. The first question was: *What is the current collaborative nature of different types of groups in teacher education?* We determined the current characteristics of the groups as described by teacher educators. That information revealed that the groups differ significantly in terms of educational objectives, activities, conditions, tools, products, number, and roles of participants. Due to these differences, these groups have the potential to prepare student teachers for working as professional teachers in diverse types of groups that exist at schools (Hoffman-Kipp et al., 2003; Pounder, 1998; Westheimer, 2008). In our previous study (Chapter 2), we had already revealed that there is much to gain in deliberately organising these groups as social learning environments. Knowing about the current practices, we could then determine the answer to the second question: *Which propositions might improve the community character of these types of groups according to teacher education stakeholders and experts on communities?* To answer this question about the design process, we used focus groups with teacher educators; student teachers, and experts in the field of teacher community and other types of communities to create a large number of propositions. After that, we evaluated the third question: *What design principles can be formulated for each of the groups, based on the propositions of stakeholders and the design strategies proposed from existing literature for bounded learning communities?* The propositions were combined with design strategies from existing research literature. As a result, we created a set of 26 design principles that are relevant for teacher education practice. Knowing which design principles are relevant within teacher education, we could

answer our fourth question: *Which sets of design principles are deemed viable according to teacher educators?* The design principles were organised into viable sets during design meetings with (groups of) teacher educators.

The answers to the four specific research questions provided the basis from which to answer our main question: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of groups in teacher education?* We presented a set of design principles for each type of group in Table 3.3. From this table it became apparent that some principles were applicable to all groups. These included "using authentic and meaningful tasks"; "discussing goals"; "using open ended topics"; "working in subgroups"; "using tools for communication and self-presentation"; "using constructive feedback methods"; and "exchanging stories". These kinds of principles can be described as common principles to be used for the development of communities (Roth & Lee, 2006), and in that way it will be useful to include them in each group. Other principles are much more specific, and are applicable to only one or two types of groups.

On the other hand, as shown in Table 3.3, most of the design principles, from all three community dimensions, were deemed relevant for the mentor group. This can be understood by keeping in mind that learning to collaborate, giving feedback and reflecting are educational objectives for this type of group (see Table 3.2), and so as a starting point this group already has many community characteristics. This idea is supported by the fact that most of the principles were already part of the group at the start (see Table 3.3). Consistent with its high number of community characteristics, many proposals were made by different stakeholders in each of the three dimensions to improve this type of group.

With regards to the subject matter group, many design principles were derived with respect to the dimensions of shared domain and shared interactional repertoire, but fewer for group identity. This might be understood as the educational objectives of this group have to do with the domain of the group, i.e., acquiring knowledge on subject matter, as well as exchanging experiences.

The fewest principles were identified as being relevant for the research group. This also could be expected considering that the educational objectives for this group are related to content much more than to the process of collaboration. This reliance on content also influences the distribution of the design principles over the three dimensions, as most principles for the research group are related to shared domain. Another explanation for the distribution of the design principles is that there is no educator present at the meetings who could explicitly intervene in the collaborative process. Although this group had the fewest relevant principles, we still believe that the principles that were found to be applicable to the research group, as listed in the last column of Table 3.3, can stimulate this group in terms of shared domain, shared interactional repertoire and group identity.

The other group in which student teachers collaborate without an educator present is the reflection group. For this group, shared interactional repertoire and, to a lesser extent, group identity, are considered important dimensions to be developed. The meetings of the reflection groups are focused on reflection and collaboration, which are represented in the design principles associated with shared interactional repertoire and group identity. Most of the principles recommended for the reflection group were focused on developing the shared interactional repertoire, which is logical as this group is focused on specific procedures for reflection (see "tools" in Table 3.2).

We reason, following The Design-Based Research Collective (2003), that a design process should be grounded in current practice, as well as in theoretical knowledge. We accomplished this grounding by giving a voice to different kinds of actors and perspectives, in this case teacher educators, experts, student teachers, and the research literature. We showed that these various actors have a unique contribution to the developmental process of design principles. Teacher educators contributed based on their practical knowledge of the current program as well as experience with designing teacher education curricula. Experts had knowledge on communities and community development in several contexts. Student teachers have "lived through" the program, and as such could contribute, based on their insiders experiences. Involving all of these perspectives and experiences resulted in a set of design principles that is optimally aligned with current practice and the relevant stakeholders, as well as with theoretical notions of community.

This study identified diverse sets of design principles for the different groups, demonstrating that a community perspective does not necessarily imply a single solution that applies in all cases. Given that not all groups in teacher education require the same design, it is important to carefully consider the specific attributes of each type of group. In this study we also demonstrated that several categories of attributes, such as educational objectives, conditions, activities, tools etc., can be helpful in the designing process for determining the specifics of the design. We believe that the customisation process that we developed has the potential to improve the groups' function with respect to their primary objective, as that is different for each type of group. Using the design principles developed within teacher education contexts may result in groups that are strengthened in terms of shared domain, shared interactional repertoire and group identity (Admiraal, Lockhorst, & Van der Pol, in press; Wenger, 1998). Having experience with working and learning in these types of groups can be useful for student teachers once they enter the teaching profession and are confronted with a diversity of teacher communities at school, as described by Little (2003).

We created design arrangements based on stakeholders and literature, but in this study, these arrangements have not been tested out in practice. It is still to be explored what the effects will be on learning or improvement. Then, the results on student teachers, and

maybe even on teachers in schools can be explored. Another limitation of this study is that we used a small number of participants in each focus group and that only two teacher education institutes in one country participated. Within other institutes, groups may have other characteristics, and accordingly have other needs in terms of community development. Thus, one should be careful with applying the results of this study in other contexts. Only when groups have similar characteristics as the groups in our study (see Table 3.2) can the design principles developed here be used. When dealing with groups that have other characteristics, we propose to consider this study as a model of how to develop a set of design principles that is aimed at stimulating group identity, shared interactional repertoire and shared domain in groups of student teachers. By combining the existing literature with the ideas of stakeholders and experts, we came to a design that was grounded in literature as well as in practice. Such a procedure can also be followed in developing designs aimed at community development in other teacher education contexts.

Chapter 4

The regulation of collaboration in teacher education[5]

Collaboration in teacher education can be seen as a way to prepare student teachers for future social practices at school. Collaboration requires the regulation of interaction and work by group members. We studied the ways in which teacher educators and student teachers regulate the different types of collaborative practices in which they were engaged in a typical teacher education program in the Netherlands. We concluded that it cannot be taken for granted that student teachers will regulation their own collaboration and that it should be taken up as a more explicit learning aim in this program.

[5] Submitted for publication in adapted form as: Dobber, M., Akkerman, S.F.,Verloop, N. & Vermunt, J.D. Regulation of collaboration in teacher education.

4.1 Introduction

Teacher education programs are intended to prepare student teachers for the profession, not only in terms of how they behave with pupils in the classroom, but also for working as professionals in close collaboration with colleagues in an institutional context. In an exploration of how this collaborative role is reflected in three teacher education programs in the Netherlands (Chapter 1), we found that, despite a strong recognition of its importance amongst teacher educators, in reality the teacher education program does not devote systematic and explicit attention to learning to collaborate. Similar results were found by Timoštšuk and Ugaste (2010) and Beck and Kosnik (2001), both concluding that teacher education is often rather individualistic. We found that teacher education programs do include forms of collaboration in which student teachers work and learn together in groups, but that collaboration in such groups is not formally designed as a learning objective in itself. As such, the potential of these groups as learning environments in terms of collaboration has not yet been fully realized.

One essential aspect of collaboration is regulation (e.g., Järvenoja & Järvelä, 2009; Jermann & Dillenbourg, 2008; Volet, Vauras, & Salonen, 2009). Regulating collaboration involves directing and supporting the collaborative activity (Damşa, Kirschner, Andriessen, Erkens, & Sins, 2010). Although an increasing amount of attention is being paid to (learning to) collaborate in teacher education (e.g., Gellert, 2008; Kaasila & Lauriala, 2010) and the importance of regulation processes in groups (e.g., Volet, Vauras, & Salonen, 2009; Järvenoja & Järvelä, 2009), we did not find any studies that combined these points of interest. This chapter aims to contribute to the existing knowledge about student teachers' collaboration in teacher education by considering their own role in regulating this collaboration. Particularly relevant are moments when student teachers are asked to take the lead in plenary sessions or to work in groups without the teacher educator for the first time. During these moments the student teachers themselves become responsible for the regulation of collaboration.

How to regulate collaboration is not self-evident. As we will describe, theories on group work differ in terms of what is considered to be an appropriate form of regulation for collaboration. In response to the literature, we hypothesize that the appropriate form of regulation in teacher education depends on the nature of the group. The aim of our study is to investigate the ways in which the student teachers regulated the various collaborative activities in which they participated during the program.

4.2 Collaboration in teacher education programs

Within teacher education programs in Western countries, collaborative activities are common (Korthagen, Loughran, & Russel, 2006; Richards, 2008; Kaasila & Lauriala, 2010). Collaborative learning can create a safe climate and build trust between student teachers, which then provides opportunities to give feedback and reflect together (Chamberlin-Quislisk, 2010). It can also have a positive effect on the cooperative instruction skills of student teachers in the classroom (Veenman, Van Benthum, Bootsma, Van Dieren, & Van der Kemp, 2002). The attention which is paid to collaboration in these programs shows that teachers are recognized as professionals who work within a social institutional context, where they have to discuss matters such as pupils, school policy or the curriculum with colleagues. This social role of teachers is also reflected in formal descriptions of teacher competence. In the Netherlands, teachers are formally expected to be competent collaborators (Stichting Beroepskwaliteit Leraren (SBL), 2004). The SBL prescribes that teachers should be able to make constructive contributions to different kinds of meetings within the school, as well as to the activities which enable the school to function appropriately and to the continuing development and improvement of the school.

Although policy documents relating to teacher education programs in the Netherlands explicitly mention this SBL competence as an inherent part of becoming a teacher, we found that this role is often neglected in three of the largest teacher education programs (Chapter 2). Many collaborative activities take place, but they are not explicitly designed as learning objectives. Instead, they are organized as efficient ways of grouping the student teachers and of working on certain topics. The student teachers' ability to collaborate with peers or colleagues at school are scarcely reflected upon and assessed. The teacher educator asks the student teachers to reflect on their collaboration with fellow teachers at their internship or school, or with fellow student teachers at the institute, mostly only if a problem occurs. Ruys, Van Keer, and Aelterman (2010) concluded that collaborative learning was not frequently implemented in Belgian teacher education institutes for primary schools. Timoštšuk and Ugaste (2010) found similar outcomes in their study of the professional identities of student teachers in Estonia, namely that student teachers do not perceive themselves as belonging to a teaching community. Ellis (2010), drawing on an Oxford teacher education program, discusses the tension between the individualistic, cognitive view of knowledge within this program and the social situation in which the student teachers participate during their internship. Similarly, Van Huizen, Van Oers, and Wubbels (2005) describe how teacher education "has been traditionally shaped and organized along a dichotomy between a pre-service, chiefly theoretical professional preparation outside the target practice, and an in-service professional life firmly directed to productivity, with only rare and incidental moments of further schooling" (p. 274).

Malderez, Hobson, Tracey, and Kerr (2007) conclude that teacher educators should consciously employ strategies which are aimed at achieving a cohesive student teacher learning group, in order to prepare student teachers for managing classroom relationships as well as teacher collaboration. The findings of these studies suggest that the focus of teacher education programs is still largely on (theoretical) preparation for the teacher's tasks in the primary process of teaching in the classroom.

While this priority is understandable given the complexity of teaching, we contend that teachers' position in the school context should not be disregarded. Professional learning and development are stimulated by evolving participation in a social practice (Van Huizen, Van Oers, & Wubbels, 2005). For new teachers, support from mentors and colleagues has a significant impact on their assimilation at school (Nasser-Abu Alhija & Fresko, 2010). The importance of the social role of teachers is clearly described in the literature on teacher communities, in which such a role can be given shape. Admiraal, Akkerman, and De Graaff (in press) argue that teacher communities represent a professional culture, provide learning environments and are valuable within different phases of the teaching career. Others found that such communities can improve professional practice, collective capacity, and continuing intellectual development (Grossman, Wineburg, & Woolworth, 2001; Little, 2003; Hammerness, Darling-Hammond, & Bransford, 2005).

Given these advantages of collegial collaboration for both the school as well as for the teachers themselves, it is relevant to explore the ways in which teacher education programs allow student teachers to become (more) competent in this respect. In this light, we investigated the characteristics of teacher education programs. We found that collaborative activities in Dutch postgraduate teacher education programs are shaped by different types of group. Each student teacher participates in each type of group during the one year program, but the configurations of student teachers between groups differ. These configurations are determined by the type of group. For example, in the subject matter group, all of the student teachers from the same subject are grouped together, while student teachers from different subjects participate in the mentor group, the reflection group and the research group. The groups also differ in size and with regard to whether or not a teacher educator is present. Table 4.1 describes the nature of the four types of group found in three Dutch teacher education programs (based on Chapter 2).

Table 4.1

Description of four types of group in teacher education in the Netherlands

Group	Main objective	Main activities	Number of student teachers	Role of student teachers	Role of teacher educator
Mentor group	Secure home base within the program	Exchange, collaboration	8–16	Participant	Leads the process, is a model and stimulates the student teachers
Subject matter group	Develop vision and practice in relation to the subject	Modelling, developing teaching material	2–50	Participant and colleague	Lead and monitor the process, stimulate activities of student teachers
Reflection group	Learn to reflect collaboratively and give feedback on experiences	Reflection	3–4	Student teachers control the process	Not present, but helps with forming groups, providing structure and feedback
Research group	Learn how to perform educational research	Conducting research	2–5	Student teachers control the process	Not present, but helps with providing feedback and keeping track of the groups

In the reflection and research groups, student teachers participate in groups that work independently, without the teacher educator being present. The mentor and subject matter groups may prepare them for these groups. We contend that collaborative activities can be employed more explicitly as a way to learn to collaborate. Based on focus groups with teacher educators, community experts and student teachers, we defined a set of (additional) activities that could be undertaken in each of these groups, with the aim of helping the student teachers to learn to work with and from one another. An example of such an activity is "rotating different roles" (Chapter 3). The four types of group are phased within the program, as can be seen in Figure 4.1.

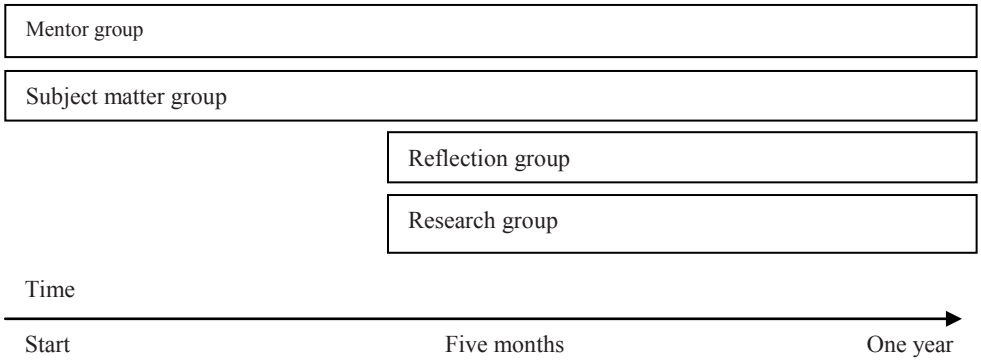

Figure 4.1 Phasing of the four types of group within the teacher education program.

4.3 Regulation of collaboration

The attention which has so far been devoted to regulation has mostly focused on individual learning processes, which are often referred to as "self-regulation" or "self-regulated learning" (e.g., Pintrich, 1999; Van Eekelen, Boshuizen, & Vermunt, 2005; Vermunt & Endedijk, 2010). In this context, regulation entails controlling and steering one's own individual learning process. More recently, there has been an interest in regulation in the context of collaborative learning. In this context, regulation entails directing the collaborative process (Volet, Summers, & Thurman, 2009; Volet, Vauras, & Salonen, 2009; Damşa, Kirschner, Andriessen, Erkens, & Sins, 2010). In literature on teacher communities, the regulation of interaction is described as contributing to a shared interactional repertoire of community members (Admiraal, Lockhorst, & Van der Pol, in press). When working independently in groups during the teacher education program, but also later in their professional life, it is assumed that student teachers will be able to regulate collaborative processes. Ideally, student teachers should be gradually prepared for this regulative task during the teacher education program.

The way in which collaboration should be regulated has not been defined in a straightforward manner. On the one hand, one finds literature on collaboration in the field of education that emphasizes co-regulation. The term 'co'-regulation emphasizes the idea that group participants should make an equal contribution to the regulation of collaboration (Volet, Summers, & Thurman, 2009; Volet, Vauras, & Salonen, 2009). In contrast, one finds a tremendous body of literature on collaboration in educational as well as various professional contexts indicating the importance of leadership in groups. In descriptions of leadership in the context of collaboration, there is usually a single person who is responsible for regulative actions (e.g., see Boal & Hooijberg, 2000; and the review by Hannah, Avolio, Luthans, & Harms, 2008). The effectiveness of either regulation by all group members or regulation by one person might be dependent on the nature of the collaborative work.

Regardless of who regulates (all group members or a single person), one basic idea underlying collaboration is that it is a dialogic process. Based on the works of Mikhael Bakhtin, Wegerif (2008) and Akkerman, Admiraal, Simons, and Niessen (2006) have described that dialogicality denotes not only how people react but also how they anticipate one another in a dialogue. As such, Wegerif states that "The boundary between subjects is not, therefore, a demarcation line, or an external link between self and other, but an inclusive 'space' of dialogue within which self and other mutually construct and reconstruct each other" (p. 353). Following on from the idea of dialogicality, the question arises of how people anticipate and react to one other. Actions are not viewed as entities in themselves, but should always be seen, and interpreted, as part of a specific ongoing social interaction.

In order to understand regulative activity it is therefore important to consider the ways in which people attune to and take up each other's actions.

In the present study, we want to focus on the following research question: *How do student teachers regulate collaboration in different types of group during a teacher education program?* This question will be investigated by looking at both the way in which the regulation of collaboration is distributed among different group members (including teacher educators), as well as at the way in which regulative actions fit into the dialogical process.

4.4 Method

4.4.1 Participants

We investigated one of the largest postgraduate teacher education institutes in the Netherlands. Student teachers enroll at this institute after having completed a Master's course in a school subject, such as economics or science. This institution is very much concerned with bridging the gap between theory and practice. Student teachers follow an intensive full-time program for one year, during which they spend half of each week at school doing an internship or job, and the other half of the week on teacher education institute-related activities. The activities at the institute mainly consist of attending meetings of the different types of group. At home, the student teachers also contribute to these groups by taking part in discussions in an electronic learning environment. We investigated one of each type of group. An overview of the number of meetings observed and the participants in each type of group is given in Table 4.2. From some meetings that were not observed, we have information from the teacher educators regarding the descriptors which apply to that meeting.

Table 4.2
Number of observed meetings and participants in different types of group

	Mentor group N student teachers= 13 N teacher educators= 2	Subject matter group N student teachers= 50 N teacher educators= 3	Reflection group N student teachers= 4 N teacher educators= 0	Research group N student teachers= 3 N teacher educators= 0
Number of observed meetings	6	6	4	6
Number of meetings for which we have descriptive data	7	6	4	8

4.4.2 Data gathering

We ensured that no student teachers were part of more than one of the investigated groups. We asked for permission from both the teacher educators and the student teachers to videotape the meetings. Subsequently, we made video observations of these meetings over a period of about six months. The researcher observed the activities without intruding, therefore taking on the role of a distant observer (Creswell, 1998). Most of the meetings of each group were observed.

4.4.3 Data analysis

We first conducted a quantitative analysis of the descriptive data. We distinguished between several regulatory situations: plenary interactions led by the teacher educator; plenary interactions led by student teachers; smaller group work by student teachers as part of plenary meetings and smaller group work by student teachers outside plenary meetings. For each meeting we recorded which of these four regulatory situations occurred.

Second, we conducted discourse analysis of all of our observations, with a focus on interaction (Taylor, 2001). We watched all of the videotapes of the meetings of each group and marked all regulative actions in an observational scheme. Regulative actions are defined as actions that steer the interaction in a new direction, such as introducing a new topic or suggesting that the group shifts to a different activity.

For each type of group we summarized the regulative actions found using discourse analysis over the course of the year. In addition, for each group, we indicated the meeting in which the control over the regulation shifted from the teacher educator to student teacher(s) for the first time, which we defined as the key meeting. The interaction in this meeting was transcribed and analyzed, taking into account regulative actions and the ways in which they were attuned to previous utterances and taken up in consequent ones.

In order to validate the data collection, analysis and synthesis of this study, we conducted an audit procedure (Akkerman, Admiraal, Brekelmans, & Oost, 2008). During this audit, it was checked whether or not the results and conclusions in this article were grounded in the data. Each analytical step was audited by an independent researcher, who was familiar with the observational scheme. Although the auditor detected some minor ambiguities, these did not have consequences for the results as described in this chapter. The auditor therefore concluded that the quality of the research and analysis process was visible, comprehensible and acceptable (i.e., reliable and valid).

4.5 Results

We will first present the results which concern the amount of regulation which was required during the teacher education program. After that, we will describe the development of each of the groups, focusing especially on one key meeting in which the regulation of collaboration shifted from the teacher educator to the student teachers.

4.5.1 Regulation of collaboration in the teacher education program as a whole

In this section, we will describe the ways in which the various types of regulation emerged during the meetings of the four groups. We distinguished four types of regulation, as mentioned in the first column of Table 4.3. In Table 4.3, we have indicated which types of regulation are took place in each meeting of each group using an 'X'. This table shows that these types of group mostly usually underwent different phases within a single meeting. This is especially true for the mentor and subject matter groups, in which the plenary educator-led parts of the meetings frequently alternated with parts in which the group of student teachers was divided into smaller groups. Table 4.3 also shows that during the program, there was a visible shift from the regulation of collaboration by the teacher educator (plenary, educator-led), towards regulation by student teachers, especially in terms of student teachers leading parts of the plenary meetings (second row) and small groups of student teachers collaborating outside of the meetings (fourth row). In Table 4.3, this shift is indicated with an '**X**'. Viewing the phasing of different types of regulation in the program as a whole, we can conclude that student teachers are given the opportunity to gradually begin to engage in regulative actions themselves.

4.5.2 Closer investigation of regulation in groups

We will now focus on how student teachers regulate collaboration within the different types of group based on our in-depth discourse analysis. For each of the groups, we will first give a broad outline of the development of the regulation of collaboration within the group and then we will describe the key meetings in greater detail, using parts of the transcripts of these meetings to portray the regulative actions described.

Table 4.3

Types of regulation within different types of group in a teacher education program

Meeting	Mentor group							Subject matter group						Reflection group				Research Group							
	1	2	3	4	5	6	7	1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	7	8
Plenary, educator-led	X	X	X	X	X	X	X	X	X		X			X				X	X			X			
Plenary, student-led				**X**	X	X	X																		X
Smaller group, within meeting	X	X	X		X	X	X	X	X		X			X	X			X	X			X			
Smaller group, outside meeting										**X**		X	X			**X**	X			**X**	X		X	X	

'X' indicates that this type of regulation was applied in this meeting

'**X**' indicates that this type of regulation had not been used before, and thus implies a shift. The meetings in which these shifts took place are defined as key meetings.

4.5.2.1 Mentor group

The mentor group consisted of 13 student teachers who taught different subjects and a teacher educator. In this group, the student teachers learn about general educational topics and apply them to their experiences at school. From our observations of the mentor group, we found that, at the beginning, the teacher educators regulated the collaboration most of the time by setting the agenda and steering the interaction. When the student teachers were working on assignments in small groups, their tasks were generally quite strict. There were three ways in which the student teachers were given some control over their interactions. First, the teacher educators gave the student teachers the opportunity to ask questions or to share their experiences with the rest of the group. The student teachers differed in terms of the degree to which they responded to these opportunities. Second, there was room for the student teachers to influence the regulation process by indicating the themes which they wanted to discuss. Third, within the mentor group, there was a great deal of room for them to reflect on the regulation process. For example, the teacher educators administered a questionnaire to the student teachers about their experiences in this group, in which they were also asked about the structure of the meetings. Some of the student teachers indicated that they felt that the meetings would benefit from being more structured and following a stricter schedule. The teacher educators discussed this with the whole group, and also gave the group members the responsibility of addressing these issues themselves. From the fourth meeting onwards, time was set aside for presentations made by the student teachers (see Table 4.3). The student teachers who were giving the presentations regulated these meetings themselves, and also encouraged their fellow group members to ask questions.

We will now turn to a more thorough analysis of the first of these meetings (meeting 4 in Table 4.3), in order to understand the shift from teacher educator to student teacher regulation. In this meeting, three student teachers presented the results of their exploration of the eating habits of pupils. The goal of this presentation was for the presenting student teachers to demonstrate their expertise in their subject to the rest of the group. The presentation was scheduled for the last 45 minutes of the meeting. The teacher educator explicitly handed over regulation to the presenting student teachers, by saying: "Good, […] I'll take a step back". At this point, the meeting became somewhat disorganized, as one of the presenting student teachers experienced some problems in starting up their PowerPoint presentation. When he was ready, he started by welcoming the audience to his group's presentation and by introducing the topic which they were addressing. He explained what was going to happen during their presentation (a game in which the whole audience was supposed to engage). After this, he gave the floor to his fellow-presenters, who he introduced as the "quiz masters". During the quiz, the presenters regulated the collaboration, by posing questions to the audience. After the audience gave

their response, the “quiz masters” gave the right answer. On a few occasions, some questions arose from the audience as can be seen in the following transcript.

Transcript 1:

Michelle: Is it that then only boys consider themselves to be thin and girls consider themselves to be fat, or er..
Linda (presenter): not only. Boys do fill in more often that they find themselves too thin.
John: muscles!
Marco (presenter): among other things.
Simone: {inaudible, laughter by the group 22:39}
Teacher educator: it is, given the physical development also very logical. Girls get hips, and soon think: I am getting bumps. In places where they don’t belong [laughs]. I don’t want that. And boys they then get, er..
Marco: but the guys also become more insecure.
Teacher educator: Yes, all pupils of that age become insecure about their appearance. But for girls there is another point, because girls get more shape and curves, and boys don’t.

This excerpt shows how the presenting student teachers were in charge of the plenary interaction. The group directed their questions to them and they, in the role of experts on this topic, elaborated and provided answers. In this excerpt, the teacher educator interrupts only once, in lines 7-9, where she directs the discussion back to the topic after people have been laughing. After the quiz, the presenters indicated that there was time for discussion. Several student teachers from the audience asked questions, which the presenters answered. At a certain point during this discussion, the teacher educator started to go into a very detailed explanation, leaving little room for the presenters. This is shown in the following transcript.

Transcript 2:

Teacher educator: there was a peak, with anorexia and bulimia like cases. That recently disappeared. But now the estimate is that 10-15% of the girls and 4-5% of the boys in puberty are starting to show this kind of symptoms.
?: that is a lot.
TE: it is a lot. It means that in every class, 10% that’s 2 or 3 children per class.
?: yes.
TE: and that is because, there has been a lot of publicity about the ideal figure, that that should stop. But in the end, that turns out apparently to have the opposite effect.
Astrid: too much attention.
TE: and exactly because there is so much attention for healthy food, and many people are

overweight, and many children are overweight, in a period of self-doubt and great insecurity about your appearance, can this lead to perfectionism, and ultimately anorexia. But anorexia is a story in itself, okay. You have children who exaggerate a bit when they diet. I mean, dieting before you're fully grown [shakes her head], you shouldn't do that and you shouldn't want that. I always talk to girls who only manage on crackers and water all day. Then I think: "start eating healthily, this isn't healthy, a whole meal sandwich is of much more use. It also takes much longer to digest, etcetera". But, eh, anorexia and bulimia are of course real eating disorders, are real physical disorders. And there is much more to that then just wanting to be slim. A lot more. It is absolutely something to keep your eyes open for.

As a consequence of the teacher educators extensive input, the group of student teachers started to direct their questions to her rather than the presenting student teachers, which shows that the role of expert had shifted from the presenting student teachers towards the teacher educator. She continued for some time, after which one of the presenters reclaimed the control of regulation, as well as the role of expert, by starting to talk about an outcome of their research project. These two different excerpts point to how the active participation of the teacher educator can influence the degree of regulation by the student teachers. Whereas in the first instance, the input of the teacher educator was minor, and helped to focus the discussion on the subject at hand, in the second case, the teacher educator took over the regulation from the presenters, thereby leaving no room for input by either the presenters or the audience. In subsequent meetings of the mentor group, the teacher educators took more of a background role during student teacher presentations.

4.5.2.2 Subject matter group

The subject matter group consisted of 50 student teachers who taught modern languages and three teacher educators. In this group, student teachers learn about subject-specific didactics. Our data show that the teacher educators mostly regulated the collaboration. With the exception of some space which was left for questions and suggestions from the student teachers (e.g., a student teacher suggested that the activities could be done in a different order), the teacher educators determined what the student teachers were supposed to do during the plenary parts of the meetings and when they should work in smaller groups. When the student teachers were asked to collaborate in small groups, the teacher educators partly determined the course of the group interaction by giving them a strict task. Sometimes they also determined the form of collaboration, for example by appointing roles to group members. Explicit forms of student regulation were not found until two months after the start of the program, when smaller meetings were organized outside of the large

plenary meetings. During these work meetings, the groups get received assignments from the teacher educators. The teacher educators usually came in at the beginning and the end of the meetings. In between, the student teachers collaborated on some sort of assignment, such as the development of a lesson plan.

We will now look in more detail at the first of these work meetings (meeting 3 in Table 4.3), as in this meeting the student teachers were required to work independently from the teacher educator. During the first meeting, six student teachers made preparations for a planned visit to a school. The teacher educators were present at the beginning in order to explain how the day would be planned and what the student teachers would be expected to do during the meeting in preparation for the school visit. They asked the student teachers to first discuss their knowledge of speaking- and conversation skills. Afterwards, the student teachers were asked to talk about the challenges and problems which they perceived as being related to working with these skills in the classroom. Finally, they were required to each choose some subjects that they would like to work on further as a preparation for the school visit, such as the preconditions related to conversation skills. As such, the teacher educators still gave explicit directions for this meeting. When the teacher educators went away, there was a great deal of chatter in subgroups. At one point, one of the student teachers addressed a question to the whole group which was focused on the first assignment given by the teacher educators, leading to a group discussion.

Transcript 3:

Romi: Guys, what is the difference between conversation skills and speaking skills, that is one big question mark for me.
?: I think that you, with speaking skills…
Irene: with speaking skills you can…
Robert: conversation skills…
Irene: I think that your conversation skill is that you should be able to react to someone else.
Romi: so that asks for more, then you have more activities…
Several others: yes.
{Robert points to his eyes}
Sandra: yes, that is much more related to communication.
Robert: with conversation skills…
Romi: so for English I think that it is more relevant, but for Spanish speaking skills.
Sandra: maybe not, because for Spanish, they do a lot of practical stuff.

The question which Romi posed in line 1-2 elicited a significant reaction from the rest of the group. Some of the student teachers started to talk at the same time, but they also tried to build on each other's comments in order to make a clear distinction between the two concepts (lines 10 and 12-13). Following on from this discussion, they started to exchange problems which they had encountered with pupils in the classroom, which was part of the second assignment set by the teacher educators. During this conversation, the student teachers showed recognition for each others problems. After focusing mainly on these problems, the discussion shifted to "good practices", another part of the second assignment, which the student teachers shared and discussed in some detail. Subsequently, one of the group members (Sandra) tried to shift the conversation back to problems, by suggesting that everyone said something about what they saw as being a problem:

Transcript 4:

1 Sandra: Maybe we could all just say what kind of problems you see, what have you already
2 met yourself, or what do you expect to come across related to speaking skills. What do you
3 reckon is the biggest, the biggest obstacle you come across in speaking, conversation or
4 speaking skills in pupils? What do you see yourself mostly?
5 Romi: yes, that they thus do not bring any of their own input.
6 Sandra: in terms of motivation, or…
7 Patricia: Yes, that you really have to work on it.

What followed was a discussion of such problems, which once again soon changed into a discussion of good practices. It was once again Sandra who tried to focus the discussion onto another topic, namely the conditions which are necessary within the classroom when practicing conversation skills. This topic was related to the third assignment set by the teacher educators. This initiative was taken up by Romi, but after a while Sandra herself once again started to talk about an example of good practice from her own classroom experience. Romi later focused attention back to preconditions:

Transcript 5:

1 Romi: Alright, we have discussed this conversation skill, and speaking skill, eh, reasonably,
2 haven't we?
3 ?: yes, discussed.
4 Romi: discussed.
5 Irene: what should we then, think of preconditions uhm…
6 Romi: yes. Preconditions.{several group members write}.

It is noteworthy that Romi used the same words as one of the teacher educators used in the beginning ("discussing", which in Dutch is "lospraten"). In addition, in other regulative actions by both Romi and Sandra, they directed attention to the assignments given by the teacher educators. This shows how the assignment given by the teacher educators functioned as a tool for regulating collaboration. What is striking in these excerpts is that the group was so easily distracted from the topic they were talking about. Many times, either Sandra or Romi directed the group's attention back to the original subject. As such, control of regulation lay mostly in their hands, and it appeared as if the rest of the group was not as capable of regulation. The assignment set by the teacher educators thus gave some direction to the regulation of collaboration, but not enough for the whole group to stay focused.

4.5.2.3 Reflection group

The reflection group consisted of four student teachers who taught different subjects. This type of group was formed within a larger group in which the student teachers first received some information from a teacher educator about what they were supposed to do and the procedure they were supposed to follow. Under the guidance of the teacher educator small groups of student teachers tried out the procedure for reflection, which consisted of several steps: the group members all shared critical experiences for one or two minutes and then, as a group, chose an experience of one group member to focus on. This group member elaborated on her or his experience, after which all of the group members asked informative questions. They ended with an analysis of the problem and by giving advice. We observed that the small groups neatly followed the procedural directions set down by the teacher educator. After two such meetings, the small reflection groups started to work independently outside the larger group. We observed one such reflection group, and could see that a much looser procedure was used; phases were applied in a less structured way, and the group shifted between the phases much more frequently. It was also visible that all of the student teachers in turns acted as regulators, both by sharing an experience, and by asking questions and stimulating others to contribute.

We will now continue to describe the first meeting of the reflection group which was observed. In this meeting, the student teachers started by discussing who would share first.

Transcript 6:

1 Lydia: Good, who wants to go first?
2 Brenda: does anyone have…
3 Sophie: No, Personally, I don't want to go at all.
4 Lauren: Brenda, in alphabetical order.
5 Lydia: Good, Brenda, you, what do you want to share?
6 Sophie: The B, B from Brenda.
7 Brenda: Well, off course I learn a huge amount, but what I sometimes find hard, is so to say
8 really, ehm, the involvement with pupils, that I am just over-involved.

By stating in line 1 "who wants to go first?", Lydia made it clear that everyone had to "go" at some point in the discussion, an idea which was rejected by Sophie in line 3, as she did not want to share. The others did not take up this rejection, and Lauren instead proposes going in alphabetical order (line 4), an idea which was immediately taken up by the other group members. In discussing Brenda's experience, all of the other group members engaged in responding and questioning. They gave Brenda advice about dealing with a difficult situation involving a pupil, and in doing so addressed her main concern, which was becoming involved at too personal a level. When the group had extensively discussed Brenda's experiences and feelings, they ended this part of the conversation and shifted to the experiences of another group member. This process was repeated until all of the group members had been granted a time to speak.

Transcript 7:

1 Lauren: And then, at least, it appears to me that you would get some more rest because of
2 that, for yourself.
3 Brenda: Yes. That's quite good [nods]. Well, thank you. This really helps me.
4 Lauren: you're welcome.
5 Brenda: well, who's next? {silence}
6 Sophie: Well, in alphabetical order, Lauren
7 Brenda: Lauren
8 Lauren: O yes. Well, I recognize exactly what you also have.

Within this group, we can see how all of the group members collaboratively regulated their conversation, as they all alternately engaged in regulative actions. In this excerpt, we can also see how Sophie, who initially said that she did not want to contribute herself, changed her mind by following Lauren's suggestion to go in alphabetical order. What is striking here is that the group outside of the larger meeting did not use the same strict, subscribed format for discussing experiences which is provided by the institute.

Instead, they used a format which resembled a normal conversation, with no strict order for asking questions, giving advice or explaining. However, they did stick with the subject and addressed each other's concerns. As such, the goal of this type of group (collaboratively reflecting on experiences) was achieved, although not by using the intended format.

4.5.2.4 Research group

The research group consisted of three student teachers who collaborated on a small-scale educational research project. The research groups began with three workshops in a larger group of about 20 student teachers, during which researchers provided information on educational research methods and the small groups started working on their research plans. In the research group which we observed, which consisted of three group members, one of the student teachers primarily regulated the collaborative process. When she was absent in one meeting, we saw how the other two group members took over her role. Her absence required each of them to regulate more than they had done in previous meetings. The last meeting was the presentation of the results of their research at a conference. For this meeting, all three group members agreed to take on a specific task, each focusing on their own subject.

We will now turn to the first meeting of this research group outside of the workshops. During this meeting, we can see how the group moved through three phases in their dialogue (initiation, renegotiation and elaboration of an idea), through which they created a process of informed decision making. An analysis of the beginning of these phases shows how the group members took it in turns to take the lead.

The initiation phase was instated by one of the participants (Ina) who introduced a new idea for their research project at the beginning of the meeting. As one can see in the following transcript, she had a great deal of influence over the direction of the collaborative research project.

Transcript 8:

Ina: I have a new idea by the way. Because I thought it would be nice to look at something else, as this has already been implemented, something that is newer, because everybody already knows this. I thought, maybe we could look at, ehm, do both of you have a supervisor at school? {looks at Rosanne}
Rosanne: Yes
Wilfred: Yes.
Ina: To look at how you are being supervized according to the VIL {a questionnaire that they have discussed previously}. That is one-to-one.
Rosanne: Yes, that is possible.

Ina: Then there are about… And then you look at all people at your school. We now have about 9 new teachers, or 12 new teachers at school. And that they all complete it themselves and so does their supervisor. Then we have 20 questionnaires or so.
Wilfred: That is a very different subject.
Rosanne: Yes, it is really different, yes.
Ina: But we can use the same literature that we have already read. And with the VIL.
Wilfred: Yes, but, what could this mean? You could only do that after 2 months, because you can't do it now.
Ina: and it is very simple to complete it.
Rosanne: Yes, but, the normal VIL can also be administered only after 2 months. So if we used that, we would have to wait for 2 months anyway.
Ina: Let's think about it.
Wilfred: I am not entirely…
Ina: enthusiastic.
Wilfred: very enthusiastic. But maybe that will come later.
Rosanne: I am enthusiastic, because it neatly fits in with what they have these days at our school with those BIO development conversations.

In the initiation phase, Ina indicated in line 1 that she had a new idea, and explained it in part. She further elaborated on this idea in lines 7-8 and 10-12. It had already become clear that Wilfred was not immediately convinced by this idea (lines 13, 16-17 and 22-24). Rosanne had already proven to be a proponent of the idea, countering Wilfred's objections in lines 19-20 and 25-26. This led to a second phase of renegotiation, in which Ina tried to convince Wilfred, who had shown himself to be skeptic. During this phase of renegotiation, Ina's regulative actions were directed towards convincing Wilfred. Wilfred's regulative actions on the other hand were directed towards finding difficulties in Ina's new idea. This phase came to an end at the point when Ina posed another new idea.

Transcript 9:

Wilfred: But in itself I don't think that it is very hard to talk about a new subject, what this is, I think, there is also more written about it.
Ina: {nods} and I thought, I had, I am just thinking about another subject, but then you have to start reading all sorts of other things. I would think it would be fun to, to look at, ehm, what is the best way to start the first lesson after the summer holiday? But then you have to take action very quickly.
Wilfred: that is really..
Rosanne: just stop Ina, because that is really unrealistic {they all laugh}.
Ina: another time.

10 Wilfred: was a nice crooked thought.
11 Ina: next year.
12 Rosanne: yes.
13 Wilfred: No, the first one is better.

In this transcript, we saw Ina proposing a new idea in lines 4-6. The other group members reacted to this new idea with a joke and in this way rejected it as being unrealistic. Remarkably, it was at this moment that Wilfred stated that he believed the first idea to be a good one (line 13). Moreover, as the following transcript shows, Wilfred took over the lead from Ina and instigated a phase of elaboration.

Transcript 10:
1 Wilfred: But if we just, eh, continued thinking about the, eh, the idea that you just had. I'm
2 starting to get a bit more enthusiastic, so {they all laugh}, and Rosanne already was
3 enthusiastic, right?
4 Ina: Because how, do you know how many new teachers there are at your school?
5 Wilfred: Yes, twelve.
6 Ina: Yes, me too, twelve. And you?

In this elaboration phase the first idea was further explored by all three group members. In considering the practicalities of the idea, they suggested that the first idea should be pursued as a shared idea, instead of owned by Ina. This group demonstrated a flexible use of regulation, with the phases of decision making initiated by different people (first Ina and later Wilfred), and a final phase of co-regulation by all group members.

4.6 Conclusions and discussion

This study aimed to explore the ways in which student teachers regulate collaboration in different types of group during a teacher education program. In the results section we have presented the findings for each group. When comparing the findings for the different groups, what conclusions can we draw? Based on the descriptive data of the types of regulation in the meetings, we can conclude that in all of the groups, the student teachers were expected to regulate collaboration in one way or another. Within the mentor and subject matter groups, which were both relatively large groups in which teacher educators were present, the required regulation was initially limited to small group work with strict assignments set by the teacher educators. During the course of the meetings, these groups gradually called for more regulation by student teachers. They were required to regulate

collaboration when leading parts of the plenary meetings as well as when doing group work outside of the large meetings. During the moments when the student teachers had to regulate with the teacher educator being present, it became visible how influential the position of the teacher educator can be. In contrast to the influence of teacher educators in these groups, in the research and reflection groups we found that the student teachers had a few introductory meetings at the beginning, after which they spent most of their time without a teacher educator, during which they were responsible for the regulation of their own collaboration.

We will now describe the differences between the types of group in terms of who regulated collaboration. In the *mentor group* most of the time there was only one regulator, namely the teacher educator. During the first meeting in which student teachers had to lead a plenary session ("key meeting"), we saw how regulation was conducted collaboratively by the three presenting student teachers. However, we also observed how the teacher educator took over at some points and how influential teacher educators can be, not only in terms of directing the interaction but also in terms of who assumes the role of expert. Within the *subject matter group*, the teacher educators were also usually the regulators of collaboration. During the first meeting in which the student teachers were regulators ("key meeting") we found that two group members took the lead. They did so by using the instructions for the assignment set by the teacher educators as tools for asking questions to the group. We found many instances of co-regulation within the *reflection group*, in which all of the group members took turns to regulate. In contrast, the *research group* shifted in terms of who took the lead during different phases of decision making, and it was only after a decision had been made that the group began collaboratively exploring and co-regulating. The differences between having one leader and co-regulation might be caused by the fact that in the research group, there was a focus on making decisions and creating a shared product, while in the reflection group, the process of collaboration was more important. As such, the group members in the reflection group might not have felt that they had to get a firm grip on the collaborative process.

We can conclude that within this teacher education program, there is neither an exclusive focus on co-regulation (as suggested by Volet, Summers, & Thurman, 2009; and Volet, Vauras, & Salonen, 2009) nor on mere reliance on one regulator (as suggested by most leadership literature, e.g., Hannah, Avolio, Luthans, & Harms, 2008; and Boal & Hooijberg, 2000). Instead, according to the specific activities and goals of a certain type of group at a certain moment, several forms of regulation could be found.

Now we will turn to the ways in which regulative actions relate to previous as well as subsequent actions. We found that regulative actions can have several different functions. The first is to keep the group focused on the topic at hand. Examples can be seen within the subject matter group, in which two group members repeatedly raised their voice

in order to proceed with a plenary discussion which had shifted to another topic. Another example of this was seen within the mentor group, when the teacher educator focused the group's attention away from a joke and back to the topic. The second function of regulative actions is to shift from one phase in the collaboration to another. An example of this can be identified in the subject matter group, in which the student teachers first discussed speaking and conversation skills, after which they started to talk about conditions within the classroom. The research group shifted from the initiation of an idea to renegotiation and eventually elaboration. The third function of regulative actions is to create space for a new speaker, of which an example was seen in the reflection group, when one group member explicitly thanked the rest of the group in order to finish the conversation about her experience and to shift the focus to someone else.

In this study, we took a dialogical perspective, following Wegerif (2008) and Akkerman, Admiraal, Simons, and Niessen (2006), which means that we focused on how people mutually define each other's roles in dialogue by reacting to and anticipating subsequent turns. Considering the dialogicality of regulative actions, we found that such actions are mostly accepted by group members and as such have a significant influence on the subsequent interactions and therefore on the collaborative process. Generally, we found that the direction that was proposed by someone was accepted by other group members and that. as such, the group as a whole proceeded in that direction. An explicit example of this is the new idea proposed by a student teacher in the research group that determined the direction of their research project. In the few cases when group members did not take up a proposed direction, this was dealt with cautiously, for example with a joke. This can be seen in the research group, when the same group member came up with a second alternative idea which the others rejected in a joking manner, so that the initiative was prudently turned down.

This study was a preliminary exploration of student teachers' regulation of collaboration during teacher education and was limited to only four groups within one teacher education institute, which means that one should be cautious in generalizing our results to other institutes. Meanwhile, we do want to stress that it is necessary to devote explicit attention to collaboration and the role of regulation within teacher education programs, as they are also important elements when working in a teacher community at a school (Admiraal, Lockhorst, & Van der Pol, in press). We propose to carefully consider the specific aims and nature of a group when structuring regulation. In our study, the group that worked on a mutual research project was involved with informed decision making, while the reflection group used a form of regulation which structured the discussion of and reflection on experiences. Another implication of our study for teacher education is that explicit attention should be devoted to preparing student teachers to reflect on their own role within the regulation of collaboration. For student teachers, paying attention to

conscious regulation is both a way to create room for ownership and control of collaboration during the teacher education program, and a way to prepare them for active participation in social practices in schools.

Chapter 5

Student teachers' collaborative inquiry: Small-scale research projects during teacher education[6]

Teacher research is increasingly described as an important aspect of professional development. In response to this emphasis on the value of teacher research throughout teachers' careers, teacher education programs have started to prepare student teachers for this part of their professional life. In this study, we will report on the collaborative inquiry processes of two groups of student teachers, with the focus on elaboration and decision making during the inquiry process. We found that in one group, there was a difference between the preferences of the group members, which led to a balanced use of elaboration and decision making. In the other group, the group members did not engage in these processes in a conscious way, which led to an arduous research process. We argue that a balanced approach, in which elaboration and decision making alternate, is desirable.

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5.1 Introduction

Teacher research is increasingly described as an important aspect of professional development (Campbell, MacNamara, & Gilroy, 2004). In response to this emphasis on the value of teacher research throughout teachers' careers, teacher education programs have started to prepare student teachers for this part of their professional life (e.g., Burn, 2007; Hiebert, Morris, Berk, & Jansen, 2007). Hammerness, Darling-Hammond, and Bransford (2005) found that graduates from teacher education programs which make extensive use of teacher research reported significantly higher feelings of preparedness and were rated more highly by employers.

According to Cochran-Smith, Barnatt, Friedman, and Pine (2009), inquiry in teacher education aims to encourage student teachers to engage in critical reflection, develop a questioning stance, understand the school culture, construct new curricula and pedagogy, modify instructions to meet students' needs and become socialized into teaching by participating in learning communities. These authors, based on the work of Cochran-Smith and Lytle (1999, 2009), discuss an important distinction between *inquiry as stance* and *inquiry as project*, advocating that the former should be the ultimate aim. Inquiry as stance is a "long-term and consistent positioning or way of seeing" (Cochran-Smith et al., 2009, p. 22), while inquiry as project is a time-bound activity within a teacher education course. In the case of inquiry as stance, inquiry becomes an inherent part of professional teaching practice, instead of being a single point in time or a single activity. Working from an inquiring stance thus means that "every site of professional practice becomes a potential site of inquiry" (Cochran-Smith & Lytle, 2009, p. 121).

In line with the idea of inquiry as stance, Hiebert et al. (2007) propose a framework with the aim of designing teacher education programs that prepare student teachers to learn from teaching. Within this framework, the analysis of teaching practices as a form of inquiry is central. These researchers propose to prepare student teachers for deliberate and systematic analysis of their own practice, which continues when they enter the profession. Burn (2007) describes an action research project for student teachers and experienced teachers as a means for continuing development. Parkinson (2009) shows that being engaged in collaborative action research during teacher education can bring about a shift in the perception of the role and needs of student teachers, leading to a more reflective stance towards their (future) practice.

In summary, conducting research is described as a promising activity in educating student teachers, but only when it is done in a purposeful, deliberate and reflective way. Our study is concerned with research groups which are situated in a Dutch teacher education program. The goal of this program is to let groups of student teachers perform an inquiry project into their own practices, with the primary aim of acquiring research skills.

Some time ago, the goal of teacher research in this program was mostly focused on reflection. That led to an approach in which research became marginalized. Due to the fact that this marginalized position of research was found to be unfit for an academic Master's course, the research project had been altered shortly before the data were collected for this study. Due to these recent changes within the program, our study aimed to investigate the ways in which inquiry as project and inquiry as stance were incorporated into the program.

In line with our aim of gaining insight into inquiry as project and inquiry as stance, we focused on two inquiry processes within two research groups in teacher education. The first process was *decision making*. This process becomes visible when group members decide to take a certain direction in their research project, which closes the door on other directions. Decision making is generally goal-directed and is recorded in products such as a report from a meeting. When most time is spent on decision making, a group is only directed at finishing a certain task and thus inquiry is only seen as a time-bound project.

The second inquiry process is *elaboration*. This process becomes visible when group members engage in a thorough discussion of a particular topic. During such elaboration, student teachers try to find meaning within their research project. We argue that spending time on both decision making and elaboration during a research project is in line with the idea of inquiry as stance, as decision making is goal-directed and thus leads to outcomes while elaboration challenges student teachers to discuss their ways of seeing and to position themselves. Our research question is: *What role do elaboration and decision making play in the inquiry process of research groups in teacher education?*

5.2 Teacher research

We have already witnessed a significant movement towards teacher research, which, according to Zeichner and Noffke (2001), started in the 1950s. Cochran-Smith and Lytle (1999) describe how a renewed interest in this topic has emerged since the late 1980s as a result of a shift in the way of thinking about teachers. They have become increasingly recognized as "knowers" and "thinkers", who should play an active role in research and who have unique knowledge regarding their own classrooms.

Teacher research is motivated by different aims, which can also be pursued simultaneously. The first is the professional development of teachers (e.g., Bianchini & Cavazos, 2007; Furlong & Salisbury, 2005; Mitchell, Reilly, & Logue, 2009; Sperling & DiPardo, 2008), which can be focused on cognitive outcomes, such as knowing more about practice, as well as on emotional or motivational outcomes such as empowerment, confidence and self-awareness. The second aim of teacher research is to improve certain aspects of pupil or student outcomes. This is done by changing practices during the research

or by informing practice afterwards (e.g., Bulterman-Bos, 2008; Castle, 2006; Cooper & Cowie, 2010; Lunenberg, Ponte, & Van de Ven, 2007). The third aim is to influence (school) policy on the basis of research outcomes (Castle, 2006; Davis, Kiely, & Ashkam, 2009; Sperling & DiPardo, 2008), which is sometimes described as related to social change in a broader sense. Overlapping with the previous aim, the fourth aim is to contribute to the wider community of teachers, both informally and formally, for example through presentations and publications (Castle, 2006; Sperling & DiPardo, 2008). Finally, some authors have also mentioned the potential contribution to (scientific) theory (Davis et al., 2009; Saunders, 2004; Zeichner & Noffke, 2001), whereas other authors doubt whether this is or even should be an aim (e.g., Furlong & Salisbury, 2005). These other authors argue that teacher research should not necessarily be the same kind of research as in educational science, set against the same criteria (Cochran-Smith & Lytle, 1999; Zeichner & Noffke, 2001).

A few studies have reported successful teacher research projects (Hall, 2009; Mitchell et al., 2009; Zeichner, 2003; Zeichner & Nofke, 2001), but many studies have concluded that teachers find it very difficult to conduct research (e.g., Atay, 2008; Bianchini & Cavazos, 2007; Lunenberg et al., 2007). Therefore, the aforementioned aims are often not reached. Many studies emphasize the conditions that need to be met, such as the necessary time and resources for teachers to engage in research. Another important condition is the need for a teacher community in which teachers share results or collaborate in order to conduct research (Cochran-Smith & Lytle, 2009; Lunenberg et al., 2007; Zeichner, 2003). On the other hand, collaboration is also described as a possible complicating factor in research endeavors (Atay, 2008; Bianchini & Cavazos, 2007; Lunenberg et al., 2007), and so it is relevant to look more precisely at how such a shared process takes shape.

5.3 Inquiry as collaborative process

According to Pontecorvo (2007) collaboration is an important tool for any type of learning and for socialization into research practice. At the same time, different authors argue that collaboration during inquiry requires more thorough preparation when compared with individual inquiry practices. Frankham and Howes (2006) on the other hand, advocate that working with disturbances during the set-up of a collaborative research project might help to establish a basis for a collaborative relationship. Kuiper, Volman, and Terwel (2009) describe the conditions that need to be met in collaborative inquiry activities. The purpose of the project should be shared between the participants, who should rely on each other's knowledge and skills and share knowledge. In their study, these conditions led to a

high level of motivation and the accumulation of knowledge. Wells (2001) advocates reflection across a group as a whole, which, according to him, can contribute to the construction of knowledge. Paulus, Woodside and Siegler (2010), as well as Zittoun, Baucal, Cornish, and Gillespie (2007), stress the importance of the development of knowledge on collaborative processes.

As collaboration during research is argued to be demanding, it is relevant to study the ways in which collaborative research processes actually take place. In the literature on collaborative teacher inquiry, three aspects of research processes are discerned, namely a focusing and planning period, the implementation of a teaching action and a period of assessment/evaluation and dissemination (Nelson, 2009; Slavit & Nelson, 2010). This model of teacher inquiry is not only aimed at researching current practices, but also at changing these practices, which happens by collaboratively implementing actions within the classroom. As we want to describe a type of inquiry that is not necessarily aimed at changing practices, we will describe our results using a more general distinction between the typical research phases: designing and writing a research proposal, gathering data, analyzing data and deriving results and conclusions, and reporting the research results (cf. Akkerman, Admiraal, Brekelmans, & Oost, 2008). Describing the processes within the student teacher research groups in each of these phases will allow us to study and compare the collaborative inquiry processes of the groups in detail.

5.4 Method

5.4.1 Participants

This study was conducted in a post-graduate teacher education program in the Netherlands. This one-year program hosts about 150 student teachers per year, teaching 19 different school subjects. The student teachers spend half of their time at an internship or job at a school and the other half at the institute. A more thorough description of the teacher education program in question can be found in Chapters 2 and 3. One of the activities in the second semester is a small-scale educational research project, in which groups of student teachers collaborate. We conducted an in-depth qualitative case study of all of the meetings of two student teacher research groups in 2008 and 2010. Both of these groups consisted of three group members, two female and one male.

5.4.2 Design of the program

The members of the groups already knew each other from other activities at the teacher education institute when they started to collaborate within these research groups. In the beginning, the groups participated in three workshops as part of larger groups of about 20 student teachers. These workshops were given by researchers from the teacher education institute. Before the beginning of these workshops, the student teachers received a syllabus, which consisted of information about the demands of the program, planning etc. During these workshops, the groups of student teachers were gradually prepared on their research project in terms of methodological knowledge and guidance in writing a research plan. Before each workshop, the groups had to hand in worksheets which together led to a research plan. They received feedback on their worksheets from the researchers as well as from their peer group through an electronic learning environment. After these workshops, the research plans of the groups had to be approved by the researchers, and approval was indicated by a "green light". The groups then started to work on their research projects, during which they were supervised by a teacher educator, whom they could call on when they needed help but who also assessed their work at the end. The student teachers were required to carry out a research project in their own schools, resulting in a presentation at a conference at the teacher education institute and an article.

5.4.3 Procedure

This is an in-depth qualitative case study (Miles & Huberman, 1994). We collected data by videotaping most of the meetings of each of the research groups. We also asked the group members to send on their email correspondence and we had access to the electronic learning environment that was used during the workshops. After each group's final meeting, each group member was interviewed via a stimulated recall procedure (Calderhead, 1981). They were first asked to choose some moments from the previous meeting which they could clearly remember. After this, these moments, as well as the beginning and end of the video, were shown to them. They were asked to report what went on in their minds during the meeting. When necessary, questions were asked about what they did, thought, felt and wanted at that moment (these questions were derived from the questions in the digital logs of Meirink, Meijer, & Verloop, 2007). The researcher asked the student teachers to only report the things that had gone on in their minds in the moment itself, and not what they thought retrospectively while watching the video. These interviews were fully transcribed.

5.4.4 Analysis

We studied the two case studies in depth, using the steps of designing and writing the research proposal, gathering data, analyzing the data and deriving results and conclusions, and reporting the research results (Akkerman, Admiraal, Brekelmans, & Oost, 2008) as structuring concepts. We conducted discourse analysis of the interactions (Taylor, 2001), contained in all of the video data from the meetings. From this analysis, we summarized the inquiry processes during each of the inquiry steps. We also analyzed the electronic material from both groups, and the transcriptions of the stimulated recall interviews. These data sources were used to supplement of the video data.

Within each of the research phases, we distinguished between the two inquiry processes of elaboration and decision making. These two processes can be employed in a strict sequence or alternated. There can also be a tension between these processes. Such a tension can manifest itself between group members, for example when one group member wants to engage in decision making while the others want to elaborate. We described in each of the research phases what role each of these processes had played.

We conducted an audit procedure (Akkerman, et al, 2008) in order to validate the data collection, analysis and synthesis of this study. An independent researcher audited each step of the analysis, in order to determine whether the results and conclusions drawn in this article are grounded in the data in a visible, comprehensible and acceptable (reliable and valid) way. The auditor concluded that the quality of the research steps was satisfactory.

5.5 Results

We will now describe the results of both case studies in each research phase. For each phase, we will first describe what happened, after which we will interpret this description in terms of elaboration and decision making. We will discuss the contrasting inquiry processes of the two groups in the conclusions section.

Case 1: Ina, Rosanne and Wilfred

Phase 1: Designing and writing the research proposal

During the workshops, the group had to provide the supervising researcher with different worksheets, which together comprised a research plan. In the beginning, both within the workshops as well as during their own meetings in between, the student teachers spent time on elaborating when deciding on the topic of their research. They did so by thoroughly

discussing the pros and cons of different potential research topics and by allowing each group member to put forward his or her ideas. The group was also active in making appointments with researchers and in keeping their supervising researcher informed. Their plans changed radically at two points during this process, in that they changed their research question when they found another one which was more relevant. They also elaborated on what data to collect and what instruments they needed for data collection. In the end, they made the decision to focus their inquiry on the topic of the supervision of beginning teachers. After getting a "green light" for their plan shortly after the last workshop, they could start gathering data.

Wilfred was the most active group member in terms of making summaries of meetings. He said at one point during this phase: "We shouldn't lose it, as happens so often". This remark, as well as the fact that he was focused on writing summaries of the discussions which occurred in their meetings, illustrates his focus on decision making. He emphasized the importance of sticking with previously made decisions, and felt that the group did not do so enough. As such, there seemed to be tension for Wilfred between the most common practice of the group and his own preferences. His tendency towards decision making was also reflected in a comment he made about not being interested in the set-up of Rosanne's data collection. His remarks consistently indicated that he only wanted to be involved with the other group members when it was necessary for the task, and not for the sake of thinking the task through, so that the group could work as efficiently as possible. As such, Wilfred was the gate-keeper who ensured that the group made final decisions about how to proceed.

Phase 2: Gathering data

In between the workshops, the group members had already been working on data collection tools. They asked for help from a researcher who was a specialist in their research topic. Rosanne insisted on keeping this researcher informed, which she underlined with her remark "I'm sort of in charge of the communication". The other two did not find it necessary to keep the researcher informed. The group first elaborated on what data to gather and what tools they needed during a meeting. They considered, for example, what teachers to include (i.e., teachers who had just finished teacher education only or teachers who came from another school as well). Based on the pros and cons, they decided to keep their focus on "real" beginning teachers. After that, the work was distributed among the group members and they commented on each other's work. Each of the student teachers collected data at his or her own school, by interviewing a supervision coordinator and using questionnaires. In between, they kept each other informed on what they were working on via email.

During the actual data gathering process, very little elaboration took place, as each group member was focused on gathering data at his or her own school. As such, making decisions and following them through was central within this phase.

Phase 3: Analyzing data and deriving results and conclusions

After gathering data individually, the group members met again in order to analyze the data and discuss the results. They asked a relative of one of the group members for help using the statistical analysis program SPSS during analysis. All of the group members went to see this relative on a Saturday and they analyzed the data together. Once again, they divided the work that had to be done, so that every group member became responsible for a certain part of the article. In this group, writing the article and deriving the results and conclusions happened simultaneously.

During this phase, goal-directed decision making was central to the activities of the group members. By dividing up the work, each group member became responsible for a certain task (e.g., writing the conclusions paragraph) and they sent emails to each other informing one another about their progress.

Phase 4: Reporting the research results

In the final meeting before their presentation, the student teachers elaborated on which approach they should take in the presentation and the article. They felt the pressure of time, which is reflected in the following remark which Ina made during the stimulated recall interview:

> Yes, then I thought, I do want to make clear, indeed, that I see something in everything. But we do have to come to a compromise, because you do not have time to think about things for a long time.

This excerpt shows that Ina felt that there was a tension between decision making and elaboration. Due to time constrains, she felt that the process of elaboration should not take too long, as the group had to make a lot of decisions during the meeting. The elaboration was frequently cut short by Wilfred. In the following excerpt, Wilfred clearly shows that he was inclined towards decision making much more than towards elaboration. “At this moment I was thinking, this discussion about exactly what we are going to do is taking far too long”. He told the others that he was busy with other things, both at school and at the institute, and had not done his part of the work. The others made cynical jokes in response to this, but also asked him to contribute to the discussion. As Rosanne said during the stimulated recall interview:

> Yes, I thought that was good, like, Wilfred was really looking a bit dazed, like, let these woman chat for a while. And then I say first: "Yes, Wilfred, what is your idea now really?" Then you see that he has already thought it out in his head, and that he had thought: "Yes, we are just going to do this, actually."

Rosanne indicated that she expected Wilfred to contribute to the discussion that she and Ina were engaging in, and also explicitly asked him to do so. At the end of this meeting, Ina and Rosanne said that in the coming week, Wilfred had to do more, as they had already done most of the work. The group members once again divided up the work and each of them was responsible for writing a certain part of the article and preparing a part of the presentation. They kept each other informed of what they were working on by email. After their presentation, the article written by this group was approved by the supervising teacher educator. The group members were happy with their positive results and were proud of themselves and their teamwork.

Here, just as in the first step, there was a significant difference between what Wilfred wanted and what the other two wanted. This time, Ina and Rosanne engaged in elaboration and expected Wilfred to contribute. He showed that he had other priorities by working on another assignment, which he had to do for his teacher education, during the meeting, but engaged in the elaboration process reluctantly because of pressure from the other group members. The group shifted between elaboration and decision making frequently during this phase, as all of the group members felt under pressure to finish their project on time. At the same time, Ina and Rosanne became gate-keepers for elaboration, so that the decisions made were grounded in discussion and in the weighing up of alternatives.

Case 2: Tom, Francis and Eva

Phase 1: Designing and writing the research proposal

This group started by spending a lot of time at the beginning of their project on elaborating on the subject of their research, for example by discussing definitions and considering various options, and on developing their research instruments. They also sought after theoretical input. In between the meetings, all of the group members read articles, which they also discussed during the meetings. After the first workshop, the group had received feedback on their research plan from the supervising researcher. In their first meeting outside of the workshops, the group members elaborated to some degree on the research plan, but they quickly decided to make the changes which had been suggested by the supervising researcher. At the end of the meetings and workshops, the group divided up the tasks, so that each group member would revise certain parts of the proposal themselves.

More than once, one or more of the group members indicated that they had not done their share of the work at the beginning of the meetings. As a result, the group spent time during their meetings on the tasks that the group members had agreed to do in between. The group's worksheets were given a "red light" by the researcher, which meant that the group had to correct them and hand them in again, which they did shortly afterwards.

It appears that in this phase, the group was neither focused on elaboration nor focused on decision making. The group spent a lot of time collaboratively writing the research proposal, as a response to some group members not having done their part of the work. This delayed the process and the research proposal put forward by the group was negatively assessed.

Phase 2: Gathering data

After their worksheet was approved, the group did not meet for one and a half months. Then Tom sent an email, proposing to meet. Francis responded on the same day by emailing a document in which she had already answered the first research question. The group discussed what had to be done in order to collect data quickly and split the work between Tom and Eva, as Francis had already answered the first research question. The group met again two weeks later. Once again, they divided the tasks at the end of the meeting and also discussed the question of when the data had to be collected. Each group member collected data at his or her own school. They merged the data afterwards.

During this phase, the group began with a long period of inactivity. After that, they planned a meeting. It seems that given the small amount of time that was left, the group made quick decisions out of necessity, without any collaborative elaboration.

Phase 3: Analyzing data and deriving results and conclusions

The group members met again two weeks later to analyze the data and to work on the results. A few days later, they had a meeting with their supervising teacher educator. They sent him some documents beforehand. The teacher educator made it clear that he was unpleasantly surprised by the documents, and that he was not convinced that the group would have enough material to actually present their work the following week. It transpired that Tom had sent wrong versions of the material to the teacher educator. Together with the teacher educator, they talked about what they would have to do in order to present their work at the conference. The student teachers had to send their new material to the teacher educator, so that he could provide them with feedback. After this meeting, the group members were all a somewhat shocked and started to work very hard in order to get things done. One of the group members had a partner who knew how to work with the statistical

analysis program SPSS, and so they had help in carrying out their analysis. After that, they met again to elaborate upon their results and conclusions.

During this phase, the shortage of time and the requirements of the program resulted in a conflict with the teacher educator. The student teachers had to engage in rapid, goal-directed decision making, as they had to produce documents for their presentation. Time for elaboration became very scarce, although the group tried to increase the time they had by planning long meetings with each other.

Phase 4: Reporting the research results

The group worked on their presentation and article at the same time as the analysis, as a result of a lack of time. In order to work on the presentation and the article, the group members divided up the work, so that everyone had something to do. Afterwards, they gave feedback on each other's work. On the day of the conference, the group came together just before their presentation in order to decide upon distribution of tasks for their presentation. They then presented the results of their research project, each taking on a part of the presentation. After the presentation, the group came together to discuss the written feedback which they had received from the audience. The group also discussed what had to be done before the article could be sent to the teacher educator and divided up the tasks which needed to be done.

The final group meeting was with the supervising teacher educator who gave them some feedback on the article which the group then had to incorporate. The fact that most of the work had been done by one person led to uncertainty for the group members, as Eva indicated during the stimulated recall interview:

> So I was really wondering, what [the teacher educator] asked here, could we easily manage that? Because I do not know were she got it from, whether she really had read the whole article, or if she got it from another article.

This excerpt shows the uncomfortable feelings which group members can experience when each member becomes responsible for a product which is important to everyone, and which has not been written as a collaborative product. At the end of this meeting, the group members set a date when they would email the next version to the teacher educator. The group members divided up the work and once again gave feedback on each other's documents. At the end, the teacher educator asked the student teachers what they had learned from this research process. Tom was critical and said that he had learned not to engage in research anymore, while the other two expressed similar feelings, albeit to a lesser extent. After this conversation, the student teachers adapted the article once again and it was approved by the teacher educator.

During this phase, the group spent a lot of time on their research project, but they usually worked separately. The group members felt uncomfortable about not knowing what the other group members were working on. At the same time, the program asked for a decision-making approach, leading towards an article.

5.6 Conclusions

We studied the inquiry processes of two research groups in teacher education with the aim of answering the research question: *How are elaboration and decision making used within two research groups in teacher education?* Whereas sole decision making is associated with task-oriented work and therefore with the idea of "inquiry as project", engaging in both elaboration and decision making is associated with taking "inquiry as stance". We considered the ways in which the groups engaged in these processes within subsequent research steps (designing and writing a research proposal, gathering data, analyzing data and deriving results and conclusions, and reporting the research results).

The first research group demonstrated an inquiry process which included both decision making and elaboration. One of the group members (Wilfred) turned out to be the gate-keeper for decision making, while the other two group members were gate-keepers for elaboration. During the different research phases, most of the time was spent on either one of these processes, but during each phase, the gate-keepers made sure that attention was directed towards both. As such, because of the difference in preferences between the group members towards the two research processes, elaboration and decision making took place in a balanced way throughout the research process as a whole. For example, within the first and the last phase, Wilfred showed impatience when he considered that too much time was being spent on elaboration, and so he tried to shift the process towards decision making. During the second and third phases, the whole group automatically shifted towards decision making after short phases of elaboration automatically, because of the time frame of the activities in these phases. The group members indicated that they felt a tension between spending time on thinking through and discussing alternatives (elaboration) and making choices in order to proceed (decision making). Nonetheless, this tension was resolved in a productive way by shifting between the processes when necessary. This enabled the group to meet the requirements of the program, producing the desired (in-between) products as collaborative products. It also led them to feel positive about their research process at the end of the project.

In contrast with the first group, in the second group both thorough and deliberate decision making and elaboration were scarce. The second group was inactive during several stages of the project, and when they were active they were mostly focused on an undirected

form of discussion as a result of the group members not having completed their tasks. This group had difficulty meeting the requirements of the program from the beginning. Although they began by elaborating on possible research directions and by writing a research plan, their process was undirected and time-consuming. During the final phases, the group was trying very hard to fulfill the requirements of the program, which they did mostly by performing parts of the research independently, with very little shared elaboration. They were trying to finish their project in time and, as a result, made quick, ad hoc decisions, instead of more deliberate decisions based on elaboration on alternatives. This group told the supervising teacher educator at the end that they were not interested in doing research in the future. This indicates that they, both during and afterwards did not develop an inquiring stance.

When considering the results of both of these research groups, it appears that both decision making and elaboration are necessary elements to reach the full potential of a collaborative research project. The second group engaged in neither of these processes in a deliberate and thorough way throughout their research project, which caused their project to be arduous and also led to a critical stance towards research. The first group, on the other hand, engaged in elaboration and decision making in an iterative way throughout the whole project. A group that engages in such a cyclical process starts with elaboration on a certain topic, after which the group is able to make an informed decision. Then, a new phase of elaboration can take place, etc. In such a process, the two processes of elaboration and decision making are balanced and mutually enriching.

Our findings also suggest that it is unnecessary to treat "inquiry as stance" and "inquiry as project" as opposites, as proposed by Cochran-Smith et al. (2009). The first group that was studied showed that it is possible to maintain inquiry as stance and to develop a positive attitude towards research in the context of a time-bound research project. However, the second group showed that this cannot be expected automatically, and a great deal seems to depend on the group and their collaborative process.

Our results correspond with the view in the literature that collaborative research is demanding (Atay, 2008; Bianchini & Cavazos, 2007; Lunenberg et al., 2007). We have shown that a research activity in which student teachers are supposed to collaborate is challenging and requires hard work. Alongside everything else that student teachers have to do for both the institute and at school, they feel under pressure of time. At the same time, the demands of the research project were quite high, and the student teachers had not been involved in this type of research before. A further complication is that three student teachers had to collaborate on one product, which had consequences for each of them in terms of receiving the teaching certificate. As such, they were each dependent on the others for their personal gain. These high demands were felt despite their grounded preparation by the teacher educators and researchers towards a clear-cut research plan and methodological

assistance at the beginning of the project. As such, it might have become tempting for the groups to concentrate on quick, ad hoc decision making, which relates to the arguments of Cochran-Smith et al. (2009) against inquiry as project. We maintain that more deliberate attention should be paid to the collaborative inquiry process, specifically elaboration and decision making, as this would allow teacher education programs to prepare and guide student teachers during research projects towards inquiry as stance.

We investigated two groups of three student teachers within a teacher education program. As such, generalizing these results to other groups or other teacher education programs is not possible. The relevance of our study lies in the description of the research processes of elaboration and decision making within the context of collaborative student teacher research. In order to see the value of these processes in other teacher research projects, other collaborative research projects should be studied, both within teacher education and in schools.

Chapter 6
Conclusions and discussion

> Email from Rosanne (1st research group) to her group members: "Well done! I'm also proud of us! Well deserved compliments, we've worked hard on it!"
>
> Email from Tom (2nd research group) to the supervising teacher educator: "You made us work hard, gave severe criticism and in that way supervised us towards an article which I'm proud of myself as well."

Although they appear to be rather similar, these remarks from the student teachers show that there were differences in their feelings towards collaboration. Whereas Rosanne emailed her group members after their article was accepted by the teacher educator, Tom emailed the teacher educator. Furthermore, Rosanne expressed feelings of pride towards the group as a whole, while Tom felt proud of the end product. Whereas Rosanne addressed the fact that the group had worked hard, Tom thanked the teacher educator for *making* the group work hard. These, at first sight, rather small differences reveal two different stances towards roles within groups, and towards collaborative inquiry.

This dissertation aims to provide insight into the opportunities that teacher education programs can offer to student teachers in terms of working and learning in communities. The general research questions were: *How does collaboration in groups of student teachers take place? How can the community development of such groups be improved?* In order to answer these main questions, four empirical studies were conducted. The focus and conclusions of each of the empirical studies will now be discussed, after which general conclusions will be drawn.

6.1 Findings from the four studies

As not much is known about the curriculum of teacher education institutes in terms of community competence development, this dissertation started out with a study into the current situation in that respect. The question which was central to Chapter 2 was: *To what extent do the teacher education curricula in three teacher education institutes in the Netherlands pay attention to and aim to stimulate the development of community competence?* The extent of the attention and stimulation which was devoted to this aspect was determined by studying different levels of the curriculum (Van den Akker, 1998, based

on Goodlad, 1994). Based on Admiraal, Lockhorst, Beishuizen, and Pilot (2007), we defined community competence as the ability to establish, maintain and develop relationships with other professionals, and to contribute to a professional learning and working culture in the school. Interviews with Heads of Department, teacher educators and student teachers, observations of groups and document analysis of study guides, portfolios and electronic learning environments were conducted. The conclusion of this study was that teacher education programs are intended to prepare student teachers for collaboration in communities. At the same time, this aim was weakly conceptualized and not thoroughly implemented nor attained. As such, the programs which were investigated did not systematically and explicitly prepare student teachers to fulfil this part of their professional role. At the same time, different types of groups were found within the teacher education programs that seemed to be well suited to stimulate the development of community competence. Mentor groups, subject matter groups, reflection groups and research groups can provide opportunities for student teachers to acquire community competence by means of collaboration.

Knowing that these different types of groups already exist in teacher education, ways to improve them were considered in Chapter 3. The question which was central to this chapter was: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of group in teacher education?* This study investigated the ideas of teacher educators, community experts, student teachers and the ideas contained in the scientific literature (e.g., Wenger, 1998; Wilson, Ludwig-Hardman, Thornam, & Dunlap, 2004) in order to create sets of design principles that might promote community development in the four types of group. Design principles were derived, aimed at the development of group identity, the shared interactional repertoire and the shared domain in groups. For each type of group, the different stakeholders determined the applicability of the design principles. The resulting sets of design principles for the various types of group differed. Some principles, such as "By exchanging stories, students detect similarities", were deemed to be relevant for all types of group. Others were considered to be relevant for some types of group, but not for others. For example, the principle "by inviting experts, the knowledge of the group is extended" was considered to be applicable within the mentor group and the subject matter group, but not within the other two group types. This study showed that a community perspective does not mean imposing a single set of design principles onto different groups, but rather that it is important to carefully consider the nature of each group.

After determining design principles for the four types of group, regulation was studied, as this is an important precondition for collaboration. The regulation of collaboration is especially important when groups are expected to regulate their own process, without a supervisor. In Chapter 4, we studied how the four types of group deal

with the regulation of collaboration. The research question for this study was: *How do student teachers regulate collaboration in different types of group in the context of a teacher education program?* For this study, a discourse analysis (Taylor, 2001) was conducted. In this analysis, we took a dialogical perspective (cf. Akkerman, Admiraal, Simons, & Niessen, 2006; Wegerif, 2008), meaning that regulative actions were seen as part of, and determined by, the larger collaborative activity. In all types of group, the student teachers were expected to regulate collaboration in some form. It was shown that during the teacher education program, the regulation of collaboration shifted from the teacher educator towards the student teachers. Student teachers became more active in leading parts of plenary meetings and collaborated more in small groups outside of the larger meetings. Several conclusions have been drawn from this study. First, the role of the teacher educator is very important, as he or she can either hinder or stimulate student teachers to take an active role in the regulation of collaboration. Hindering can, for example, take place when a teacher educator takes over the regulation of collaboration during a plenary meeting which is supposed to be led by student teachers. Stimulation can take place, for example, when teacher educators provide small groups of student teachers with clear assignments that can be used as structuring tools during the meeting. A second conclusion pertained to the regulation of collaboration by one leader or co-regulation by more group members. It was found that within the reflection group, co-regulation was most common, while in the context of the research group, one person usually regulated collaboration within a certain research phase. A third conclusion which was drawn from this study was that regulative actions can have several functions, namely to keep a group focused on a certain topic, to shift to a new phase in collaboration, and to create space for a new speaker. It is argued that teacher education programs should devote explicit attention to the different roles which student teachers can take in regulating collaboration.

From the data on the four types of group it became apparent that it was relatively difficult to apply the "regular" design principles for community development to the *research group* type. At the same time, it appeared that collaborating within this type of group was quite demanding for student teachers. As a result of these difficulties, the inquiry process within this group was studied in a more thorough way, focusing on the shared domain and shared interactional repertoire of research groups. These dimensions of community were investigated by looking at the processes of "elaboration" and "decision making". Elaboration and decision making are both processes that allow groups to define a shared goal and build shared knowledge, which makes them instances of the development of shared domain. At the same time, both elaboration and decision making entail a certain way of interacting, by which they become instances of shared interactional repertoire. This was reported in Chapter 5, which focused on the question: *What role do elaboration and decision making play in the inquiry processes of research groups in teacher education?*

This study was contextualized within a recent discussion about "inquiry as stance" versus "inquiry as project", the first being a "long-term and consistent positioning or way of seeing", while the second is a time-bound activity in a teacher education program (see Cochran-Smith, Barnatt, Friedman, & Pine, 2009, p. 22; for a more extensive discussion of the concept of "inquiry as stance", see Cochran-Smith & Little, 2009). The inquiry processes of "decision making" and "elaboration" were studied. Whereas being predominantly engaged in decision making is related to approaching inquiry merely as a project, alternating between decision making and elaboration can be related to taking inquiry as a stance. This study showed the occurrence of these processes in two small research groups, each consisting of three group members. The first of these groups alternated between elaboration and decision making in a conscious and meaningful way. This was facilitated by the fact that one of the participants was the gate-keeper for decision making and the two others were gate-keepers for elaboration. As such, each of these processes was engaged in thoroughly within the process. The group attained good outcomes and group members were proud of their process in the end. The second group engaged in the two processes to a minimal extend, and in a non-deliberate way. They did not get a firm grip on their research process, which was revealed by their engagement in long, undirected discussions as well as by the fact that they made ad hoc decisions. This group had difficulty in meeting the requirements of the program, the group members were not satisfied with their process and at the end of the research project they had a negative image of "research". This study was helpful in terms of gaining a more detailed qualitative understanding of the inquiry processes of "elaboration" and "decision making" in research groups. These processes have provided insight into the development of the shared domain and shared interactional repertoire of this specific type of bounded student teacher learning community.

6.2 General conclusions and discussion

With the conclusions from the different studies in mind, a general conclusion can be reached. The research questions which were central in this dissertation were: *How does collaboration in groups of student teachers take place? How can the community development of such groups be improved?* Four general conclusions can be drawn as an answer to these questions. The first is that collaboration is thought to be important in teacher education, but at the same time, it is not implemented in a systematic and explicit way. The second general conclusion relates to the fact that there are opportunities to improve collaboration within teacher education. The third conclusion is that different group types should be seen as a desirable form of diversity. The fourth conclusion is that

collaboration within groups of student teachers is not automatically a success. Each of these general conclusions will now be elaborated upon.

From the four studies investigated in this dissertation, it can be concluded that collaboration is considered to be important by those involved in teacher education, but that in practice, it is not part of the curriculum in a systematic or in an explicit way. This finding is in line with other studies, in which it has been found that student teachers in teacher education programs collaborate with each other only occasionally (Ruys, Van Keer, & Aelterman, 2010). This dissertation shows that student teachers are given opportunities to collaborate and engage in the regulation of collaboration, which takes shape within four types of groups, but that collaboration is not seen as a learning aim. Consequently, it is not clear whether student teachers will actually be able to engage in meaningful collaboration themselves as well as apply it within their own classrooms. The regulation of collaboration is a precondition of good collaboration, and as such the organization of regulation within the different types of group becomes an important issue. At the same time, it was found that the regulation of collaboration is also does not given explicit attention within the teacher education program.

Although presently very little explicit attention is paid to collaboration within the teacher education programs in question, looking at groups in teacher education from a community perspective opens up valuable insights into the development of better practices, and ultimately could lead to better learning for student teachers. Our first recommendation is that appropriate sets of design principles aimed at community development for each type of group can be developed, as was done in Chapter 3. This study has shown what a process of developing design principles can look like when a communicative approach (Visscher-Voerman & Gustafson, 2004) is applied. Such an approach implies taking the perspectives of different stakeholders into account. By means of that approach, we developed design principles which are aimed towards the development of a group identity, a shared interactional repertoire and a shared domain.

The second recommendation is that conscious attention should be devoted to the preparation of student teachers for taking an active role in different types of regulation. This recommendation builds on literature in which co-regulation is most valued (e.g., Volet, Summers, & Thurman, 2009; and Volet, Vauras, & Salonen, 2009) as well as on leadership literature, in which one regulator is seen as the best practice (e.g., Hannah, Avolio, Luthans, & Harms, 2008; Boal & Hooijberg, 2000). We state that being able to engage in both types of regulation would make the best preparation for practices at school, as teachers are increasingly engaged in different types of community, in which they will be assigned different types of roles in terms of regulating collaboration.

The third recommendation is that collaboratively engaging in elaboration and decision making in an iterative, conscious and well-prepared way within research groups

might improve both the outcomes of such groups, and the group members' feelings of success. This elaborates on the dichotomy which Cochran-Smith and Lytle (2009) pose between "inquiry as stance" and "inquiry as project". When a group engages in both elaboration and decision making, the group members can take on inquiry as a stance, while participating in an inquiry project. Teacher education programs in which student teachers engage in a collaborative inquiry project should therefore prepare groups of student teachers to engage in elaboration and decision making.

When improving teacher education in each of the described directions, consideration should be given to the fact that groups in teacher education differ greatly. They differ in their educational objectives (e.g., gaining knowledge on a specific subject or conducting a research project), activities (e.g., reflection or role play), conditions (e.g., homogeneous groups or heterogeneous groups), tools (e.g., a pre-defined reflection method or a school book), products (e.g., lesson plans or a research report), the number of participants (e.g., three or 40) and the roles of group members (e.g., student teachers as active regulators or listeners). Consequently, when one's aim is community development within groups, it is important to first consider the current characteristics of the group. This is in contrast with most literature on communities, in which this concept is usually defined along a single set of characteristics, which presumably is thought to be applicable to each community. When different communities are mentioned, these differences are often stated in terms of weak or strong communities, such as in the study by McLaughlin and Talbert (2001). Such categories imply that there is one type of community which should be strived for. Conversely, Wenger, McDermott, and Snyder (2002) acknowledge the fact that communities of practice can take a variety of forms, distinguishing, for example, between small or big, homogeneous or heterogeneous and spontaneous or intentional communities. We similarly argue that different types of community all have their own benefits for group members in terms of unique working and learning opportunities, and that as such, a diverse range of types of community is desirable.

Collaboration is often thought of as a process that every adult can easily engage in, but this dissertation shows that there is more to it than that. Rojas-Drummond and Mercer (2003) state that children are not commonly taught how to talk together effectively or helped to develop dialogic strategies for thinking collectively. Most of the literature on learning to collaborate focuses on collaboration between pupils in the classroom (e.g., Fawcett & Garton, 2005; Webb, 2009; Williams & Sheridan, 2010), while studies on how teachers learn to collaborate are scarce (Ruys, Van Keer, & Aelterman, 2010). Grossman, Wineburg, and Woolworth (2000) state that one of the first lessons that should be learned in teacher communities is that the collective wisdom and knowledge of the group exceeds that of the individual group members. In teacher education, both the learning process of student teachers and also the learning processes of their future pupils are involved. As such,

learning how to collaborate is even more important in educating student teachers for professional practice than within other educational contexts (Matusov, 2001). Only when people collaborate in a conscious way are they able to reflect and, when necessary, change their practice.

6.3 Limitations

The studies within this dissertation mostly employed qualitative methods, both in terms of data collection as well as in the process of analysis. Such methods can help to get an in-depth picture of the processes and activities within groups. Discourse analysis in particular revealed how the actions of group members were part of the social practice of the group as a whole. As such, this does justice to the inherent dialogicality of such actions (cf. Akkerman, Admiraal, Simons, & Niessen, 2006; Wegerif, 2008). The downside of using such qualitative methods, and especially discourse analysis, is that they are very time-intensive and only a small number of participants can be studied. In the first study, three teacher education institutes were investigated, in the second study we investigated two teacher education institutes, the third study investigated four groups in one teacher education institute and the last study investigated only two small groups in one institute. These small sample sizes necessitate caution in generalizing the results of these studies.

In this dissertation, the learning outcomes for student teachers were only investigated in Chapter 2, when describing the outcomes for student teachers pertaining to the development of community competence. The focus of the other studies was mostly on describing the processes within groups of student teachers. Although this was a conscious choice, stemming from the fact that not much was previously known about how collaborative processes develop within groups in teacher education, it can be seen as a limitation to not consider whether or not a collaborative process actually leads to the intended outcomes, be it in terms of individual learning outcomes (i.e. community competence) or group outcomes.

A related limitation concerns the role of the teacher educator in collaborative activity. As we have focused on different types of group of student teachers and their processes, little attention has been devoted to the role of the teacher educator. The importance of this role, in terms of, for example, organization and conflict management, can be very significant (Matusov, 2001). A focus on the teacher educator, both in terms of design as well as the analyses of practice, might reveal other crucial aspects concerning collaboration and community development than the ones found within this study.

6.4 Suggestions for future research

The small sample sizes combined with the collaborative design approach made it impossible to systematically determine the effects of a design which aimed to achieve community development in teacher education groups. A large-scale experimental study, including several conditions, could reveal whether the sets of design principles which have been developed, complemented with our recommendations for more explicit practice in preparing student teachers for taking an active role in the regulation of collaboration and consciously alternating elaboration and decision making during research, actually lead to better outcomes for student teachers. In addition, the role of the teacher educator deserves a more thorough examination. Ideally, further studies would investigate whether or not student teachers who have followed a program which includes these improvements would perform better within communities in schools, and maybe even gain better student outcomes.

At the same time, combining a larger number of small-scale studies and applying different qualitative research and analysis methods will be necessary. This would provide a more detailed insight into how the processes involved in collaboration and the roles of different group members in these processes affect individual and group outcomes. As such, theoretical knowledge on collaborative processes, as well as practical ideas on how to support them, could be developed. In these studies, more aspects which are relevant to communities (cf. Admiraal, Lockhorst, & Van der Pol, 2011) could be investigated, as well as the relationships between them. More in-depth studies could complement the larger scale study mentioned above.

Looking at groups from a community perspective is also valuable within teams of teachers (Brouwer, Brekelmans, Nieuwenhuis, & Simons, in press) and within groups that are formed in the context of school-university partnerships (Vandyck, De Graaff, Pilot, & Beishuizen, in press). Within these contexts, more research is also needed into how community competence develops, which designs stimulate community development, how regulation of interaction is given shape within communities and how the groups engaged in inquiry develop. In that way, the themes central in this dissertation can be investigated across the entire professional life of a teacher.

6.5 Implications for teacher education

In teacher education, more attention could be devoted to preparing student teachers for taking an active role in communities in schools. As found in Chapter 2, collaboration with the aim of community development is said to be deemed important, and yet it is not given systematic and explicit attention within the program. More attention could be devoted to the social aspects of the teaching profession by focusing and reflecting explicitly on the role each student teacher takes in (the regulation of) collaboration during the teacher education program. In such a way, they can learn how to take control of their own development as a community-member and deliberately change this when necessary.

A better conceptualization of collaboration in the teaching profession, as well as the development of ideas on how this can help to prepare student teachers for practice, would be necessary. This would require discussions between Heads of Department and teacher educators, aimed at developing a shared goal towards improving collaboration between student teachers within the program. From this study, three important topics for such discussions can be given.

First, it is important to keep in mind that not all types of group in teacher education programs are the same, and a such, collaboration within these groups should not be the same. The aim and nature of the group should be taken into account when developing designs aimed at stimulating community development in each group.

Second, more explicit attention should be paid to regulation processes within groups as actively involving in regulation is one way to prepare them for professional teacher communities at school. Student teachers can become prepared for this by taking on increasingly more active roles in regulating collaboration. When working in small groups without a teacher educator present, they can be asked to reflect on this regulation and when necessary, change it.

Third, when research is conducted within groups of student teachers, explicit preparation for engaging in both elaboration and decision making during such a project can give them a good starting point. During the process, the student teachers can be asked to reflect on their collaborative process and, when necessary, adapt it. Although it is only the first step in their professional career, teacher education can prepare student teachers to engage in professional communities in schools by means of developing community competence.

Appendix 1

Case 'mentor group' for teacher educators

Jan is a teacher educator at a university teacher education institute, in which he, among others, is the supervisor of a mentor group. He notices that the student teachers, apart from acquiring knowledge concerning pupils' learning, also need knowledge on how to deal with colleagues and how they function in a group. That is why he wants to let the student teachers in his mentor group interact better with each other. He wants to let them experience what it is like to learn and work together. The student teachers are at the institute on Mondays and Jan sees them for 2 hours. His idea is that he might also use ICT. The question is how he, both within the meetings at the institute as outside of these, can stimulate the student teachers in their collaboration.

Appendix 2

Case 'mentor group' for student teachers

The mentor group is your secure home base within the programme and has several goals, one of which is collaboration. An example of that collaboration is mutual classroom visits within groups of four student teachers. To do that, it is important that you start with thinking about what you want to learn from each other and what questions you have, which you can share using Blackboard. After the classroom visit you discuss with each other whether everybody's learning goals were attained and what is left to work on. A report of this meeting can be put on the Blackboard system.

Nederlandse samenvatting

In dit proefschrift wordt verslag gedaan van vier studies waarin het samenwerken tussen docenten in opleiding (dio's) onderzocht is. Samenwerking in de lerarenopleiding is belangrijk, omdat dit het leerproces van de dio's tijdens de lerarenopleiding kan stimuleren en omdat ze zo voorbereid kunnen worden op hun eigen sociale rol als collega op school.

In **hoofdstuk 1** wordt de achtergrond van dit onderzoek, het theoretische raamwerk en de opzet van het proefschrift besproken. Docenten voelen zich vaak geïsoleerd in de school en hebben behoefte aan meer contact met collega's. Een mogelijkheid hiertoe bieden leer- en werkgemeenschappen van docenten. Vanuit de literatuur (bijvoorbeeld Achinstein, 2002; Grossman, Wineberg, & Woolworth, 2001; Little, 2002, 2003; McLaughlin & Talbert, 2001; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006) weten we dat dit soort gemeenschappen kunnen bijdragen aan het ontwikkelen van een gedeelde visie of collectieve capaciteit op school, professionele ontwikkeling van docenten en betere leerlingresultaten. Tegelijkertijd is het niet automatisch zo dat dit soort gemeenschappen succesvol zijn, dus een goede professionele voorbereiding is van belang. Binnen de lerarenopleiding kunnen dio's voorbereid worden op hun toekomstige deelname aan deze groepen door al in soortgelijke groepen samen te werken. Uit onderzoek (Ruys, Van Keer, & Aelterman, 2010; Timoštšuk & Ugaste, 2010) is gebleken dat in de lerarenopleiding niet veel samenwerking plaatsvindt.

Leer- en werkgemeenschappen maken het mogelijk om samen te werken en te leren binnen een betekenisvolle activiteit. Zij kenmerken zich door een groepsidentiteit (de aard van de groep), gedeeld domein (de inhoud van de samenwerking) en een gedeeld interactierepertoire (de manier waarop de groep functioneert). In de lerarenopleiding kunnen ook leer- en werkgemeenschappen gecreëerd worden. Deze verschillen echter van 'professionele docentgemeenschappen' doordat hier leren het doel is, en de gemeenschappen deel uitmaken van een relatief kort, vooraf bepaald en verplicht curriculum. Doordat deze leer- en werkgemeenschappen van dio's voor een groot gedeelte gebonden zijn aan een vast curriculum, is er minder ruimte voor autonomie van de groepsleden. Omdat het de intentie is om dio's voor te bereiden op professionele docentgemeenschappen is aandacht voor de rol van dio's in het reguleren van de communicatie extra belangrijk. De vragen die centraal staan in dit proefschrift zijn: *Hoe verloopt samenwerking in groepen docenten in opleiding?* En: *Hoe kunnen we de*

ontwikkeling van dit soort groepen als leer- en werkgemeenschappen bevorderen? Er zijn voor de beantwoording van deze vragen vier deelstudies gedaan.

In **hoofdstuk 2** wordt verslag gedaan van een studie naar de plaats die samenwerking op dit moment heeft in het curriculum van de lerarenopleiding. De vraag die centraal staat in dit hoofdstuk is: *In hoeverre wordt er in het curriculum van drie lerarenopleidingen aandacht besteed aan het bevorderen van de ontwikkeling van de competentie om in leer- en werkgemeenschappen te kunnen functioneren?* Dit is onderzocht door middel van interviews met hoofden van afdelingen, lerarenopleiders en dio's, observaties en analyses van studiegidsen, portfolio's en elektronische leeromgevingen. Er is daarbij onderscheid gemaakt tussen het geplande, toegepaste en bereikte curriculum. Uit deze studie bleek dat lerarenopleidingen het wel belangrijk vinden om hun studenten voor te bereiden op het samenwerken in leer- en werkgemeenschappen, maar dat dit zwak geconceptualiseerd is in het toegepaste en bereikte curriculum. Met andere woorden, opleidingen willen wel, maar doen het niet op een weldoordachte en systematische manier. Tegelijkertijd blijken er wel verschillende typen groepen te bestaan die geschikt zijn om dio's competenter te maken op het gebied van leer- en werkgemeenschappen. Deze typen groepen zijn *mentorgroepen*, waarin algemeen onderwijskundige onderwerpen aan de orde komen onder leiding van een lerarenopleider; *vakdidactiekgroepen*, waarin vakspecifieke onderwerpen worden behandeld door een lerarenopleider; *onderzoeksgroepen*, waarin dio's in kleine groepjes samenwerken aan een kleinschalig onderzoeksproject; en *reflectiegroepen*, waarin dio's in kleine groepjes reflecteren op hun doceerervaringen op school.

In **hoofdstuk 3** zijn vervolgens ontwerpprincipes ontwikkeld, gericht op het verbeteren van de samenwerking in verschillende leer- en werkgemeenschappen in de lerarenopleiding. Hiervoor zijn verschillende belanghebbenden geïnterviewd, namelijk lerarenopleiders, dio's en experts op het gebied van leer- en werkgemeenschappen. Ideeën uit deze interviews zijn gecombineerd met wat bekend is vanuit de literatuur om te komen tot sets van ontwerpprincipes. Daarbij is gekeken in hoeverre verschillende ontwerpprincipes voor de verschillende typen groepen in de lerarenopleiding relevant zijn. De onderzoeksvraag die hierbij centraal stond is: *Wat zijn geschikte sets van ontwerpprincipes voor verschillende typen groepen in de lerarenopleiding, volgens de bestaande literatuur en ideeën van verschillende belanghebbenden?* Er zijn door middel van focusgroepen en interviews ontwerpprincipes ontwikkeld gericht op de groepsidentiteit, het gedeelde domein en het gedeelde interactierepertoire van de groepen. Voor elk type groep is een set van ontwerpprincipes ontwikkeld, waarvan sommige al toegepast werden door de lerarenopleider en andere niet. Er zijn ontwerpprincipes die relevant gevonden worden voor alle typen groepen, zoals 'door verhalen uit te wisselen, kunnen dio's overeenkomsten op het spoor komen'. Andere principes waren niet geschikt voor alle

groepen. Bijvoorbeeld het principe 'door experts uit te nodigen, wordt de kennis van de groep vergroot' werd wel toepasbaar gevonden voor de mentor- en vakdidactiekgroep, maar niet voor de onderzoeks- en reflectiegroep. Deze studie maakt duidelijk dat het van belang is om verschillende belanghebbenden mee te laten denken over een ontwerp, en dat bij het ontwikkelen van een ontwerp de aard van de groep in acht moet worden genomen.

Na het ontwikkelen van ontwerpprincipes die richting kunnen geven aan activiteiten in de opleiding, zijn deze geïmplementeerd in de groepen en zijn er data verzameld over het samenwerkingsproces binnen elke groep. Bij de analyse van deze data is er aandacht gegeven aan een cruciale voorwaarde voor goede samenwerking, namelijk regulatie. Doordat studenten een actieve rol spelen in de regulatie van hun samenwerkingsproces kunnen zij zelf richting geven aan dat proces. In **hoofdstuk 4** wordt verslag gedaan van een studie naar regulatie van de samenwerking in de vier typen groepen. De onderzoeksvraag van dit hoofdstuk is: *Hoe reguleren docenten in opleiding hun samenwerking in verschillende typen groepen in de lerarenopleiding?* Door middel van gespreksanalyse is gekeken hoe in elke groep de regulatie verloopt. Hierbij is gebruik gemaakt van een dialogisch perspectief, wat betekent dat elke actie gezien wordt als onderdeel van, en bepaald door, de activiteit waarvan de actie deel uitmaakt. Er worden drie conclusies getrokken op basis van dit onderzoek. De eerste is dat de rol van de lerarenopleider cruciaal is, omdat hij of zij grote invloed heeft op de rol van de dio's in de regulatie. Deze invloed kan zowel positief als negatief zijn, waardoor dio's een meer of minder actieve rol kunnen spelen in de regulatie van de groep. Een tweede conclusie is dat in verschillende typen groepen verschillende typen regulatie gebruikt worden. In de reflectiegroep wordt bijvoorbeeld vaak gebruik gemaakt van co-regulatie, wat inhoudt dat meerdere groepsgenoten samen richting geven aan de communicatie. In de onderzoeksgroep daarentegen is het meestal één persoon die in een bepaalde fase veel reguleert. De derde conclusie van deze studie is dat regulatieve acties verschillende functies kunnen hebben, namelijk om als groep gericht te blijven op een bepaald onderwerp, om naar een nieuw onderwerp over te gaan of om naar een nieuwe spreker over te gaan.

Uit de literatuur (Cochran-Smith, Barnatt, Friedman, & Pine, 2009) en op basis van de verzamelde data blijkt dat samen onderzoek doen veeleisend is voor dio's. Er is daarom in **hoofdstuk 5** in detail onderzocht hoe het onderzoeksproces in twee groepjes is verlopen. Meer specifiek is er gekeken naar de processen 'elaboratie' (d.w.z. het gedetailleerd verkennen van de mogelijkheden voor een volgende stap) en 'beslissingen nemen'. Deze processen geven inzicht in het gedeelde domein van de groep en in het gedeelde interactierepertoire. De vraag die centraal staat in dit hoofdstuk is: *Welke rol spelen elaboratie en het nemen van beslissingen in het onderzoeksproces van onderzoeksgroepen in de lerarenopleiding?* Er is gebruik gemaakt van video-observaties en interviews waarbij dio's terugkijken naar videofragmenten en beschrijven wat ze op dat

moment deden, dachten, voelden en wilden. Uit dit onderzoek blijkt dat in één onderzoeksgroep beide processen op een bewuste en betekenisvolle manier werden afgewisseld. Twee groepsleden zorgden ervoor dat er tijd werd besteed aan elaboratie, bijvoorbeeld door verschillende mogelijkheden uitgebreid te bespreken en tegen elkaar af te wegen. Het derde groepslid was meer gericht op het nemen van beslissingen, bijvoorbeeld door aan te geven dat er een beslissing genomen moest worden zodat ze verder konden met hun onderzoek. Dit groepje bereikte met gemak een goede uitkomst en was trots op het proces. De andere onderzoeksgroep besteedde veel minder tijd aan beide onderzoeksprocessen en als ze dat deden had het de vorm van lange, ongerichte besprekingen en ondoordachte ad hoc beslissingen. Het onderzoeksproces van deze groep verliep moeizaam en aan het einde van het proces hadden de groepsleden een negatief gevoel over ´onderzoek doen´. De conclusie is dat zowel elaboratie als beslissingen nemen nodig zijn in een goed onderzoeksproces. Door op een bewuste en betekenisvolle manier te elaboreren en beslissingen te nemen kan een groep veel leren over het doen van onderzoek. Deze studie naar de processen 'elaboratie' en 'beslissingen nemen' geeft aan hoe in dit type groep het gedeelde domein en het gedeelde interactierepertoire ontwikkeld kunnen worden.

Op basis van de resultaten van de vier empirische studies worden in **hoofdstuk 6** conclusies getrokken, beperkingen van het onderzoek en implicaties voor de toekomst besproken. Er zijn vier overkoepelende conclusies op basis van de vier studies die worden besproken. De *eerste* is dat samenwerking door betrokkenen wel belangrijk wordt gevonden voor lerarenopleidingen, maar dat dit niet op een systematische en expliciete manier wordt ingezet in het curriculum. Er zijn wel allerlei activiteiten waarin wordt samengewerkt, maar samenwerking lijkt geen expliciet leerdoel. Hetzelfde geldt voor regulatie van samenwerking: er wordt van dio's verwacht dat ze de samenwerking reguleren, maar dit krijgt geen expliciete aandacht.

De *tweede* algemene conclusie is dat er verschillende mogelijkheden zijn om in de lerarenopleiding de aandacht voor het ontwikkelen van leer- en werkgemeenschappen te vergroten. In dit proefschrift is hiertoe een eerste aanzet gegeven door het ontwikkelen van ontwerpprincipes die passend zijn binnen de al in de lerarenopleiding aanwezige typen groepen (hoofdstuk 3). Aanvullend geeft hoofdstuk 4 aanwijzingen voor een bewustere aanpak bij het bevorderen van een actieve rol van dio's in regulatie van samenwerking en wordt in hoofdstuk 5 de aandacht gevestigd op het belang van zowel elaboratie als het nemen van beslissingen bij het gezamenlijk werken aan onderzoek.

De *derde* algemene conclusie is dat groepen in de lerarenopleiding sterk van elkaar verschillen en dat daar rekening mee gehouden moet worden bij beoogde bevordering van leer- en werkgemeenschappen. Diversiteit in typen groepen is wenselijk, omdat dit dio's de kans biedt competenties op te doen waarmee zij aan verschillende typen groepen op school kunnen deelnemen.

De *vierde* algemene conclusie van dit proefschrift is dat er grote verschillen zijn in de mate waarin groepen 'spontaan' in staat zijn tot goede samenwerking en dat tijdens de lerarenopleiding gerichte aandacht nodig is voor het aanleren van die samenwerking. Daarbij is het voor toekomstige docenten extra belangrijk om te leren samenwerken, omdat het niet alleen om hun eigen leerproces gaat, maar ook dat van hun (toekomstige) leerlingen.

De belangrijkste beperking van dit onderzoek betreft de beperkte omvang van de onderzoeksgroep, waardoor voorzichtigheid is geboden met het generaliseren van de resultaten. Tegelijkertijd heeft dit een diepgaande analyse van de data mogelijk gemaakt. Daarnaast zijn de leeruitkomsten (in termen van de competentie om in leer- en werkgemeenschappen te kunnen functioneren) van de dio's alleen in de eerste studie onderzocht. Een laatste beperking is dat er nu vooral aandacht is besteed aan de verschillende typen groepen en met name processen die de dio's in deze groepen doormaken, waardoor de rol van de lerarenopleider relatief weinig aandacht heeft gekregen.

Gerelateerd aan deze beperkingen zijn er richtingen voor mogelijk vervolgonderzoek besproken. Aan de ene kant kan een grootschalig experiment inzicht geven in welke ontwerpprincipes en aanbevelingen precies goed werken, en welke rol de lerarenopleider hierin heeft. Aan de andere kant zouden meer kwalitatieve studies in andere lerarenopleidingen wenselijk zijn, gericht op het krijgen van inzicht in het samenwerkingsproces en de rollen van verschillende groepsleden daarin.

Summary

This dissertation reports on four studies in which collaboration between student teachers has been investigated. Collaboration during teacher education is important, as it has the potential to stimulate the learning process of the student teachers during teacher education as well as to prepare them for their own social role as colleagues in school.

Chapter 1 gives an overview of the background of this research, the theoretical framework and the set-up of the dissertation. Teachers often feel isolated in school and want to have more contact with their colleagues. An opportunity to do so can be found within teacher communities. From the literature (e.g., Achinstein, 2002; Grossman, Wineberg, & Woolworth, 2001; Little, 2002, 2003; McLaughlin & Talbert, 2001; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006) we know that this type of community can enhance the development of a shared vision and collective capacity in school, professional development of teachers and better results of students. At the same time we know that such communities are not automatically successful, which makes it important that teachers are professionally prepared for collaborating in teacher communities. Student teachers can be prepared for their future participation in such communities during teacher education, by means of collaborating in similar types of communities. Research by Ruys, Van Keer, and Aelterman (2010) and Timoštšuk and Ugaste (2010) has shown that in teacher education little collaboration takes place between student teachers.

Teacher communities create the opportunity to work and learn together within a meaningful activity. They are characterized by a group identity (the nature of the community), a shared domain (what a community is about) and a shared interactional repertoire (how a community functions). There are opportunities within teacher education to create communities. These differ from professional teacher communities because learning is an explicit goal and such communities are part of a relatively short, predefined and compulsory curriculum. As these communities of student teachers are in large part bounded by a fixed curriculum, participants have less autonomy. As they are meant to prepare for work in professional teacher communities, attention to the role of student teachers in regulation of collaboration is very important. The questions that are central to this dissertation are: *How does collaboration in groups of student teachers take place? How can the community development of such groups be improved?* To find answers to these questions, four studies were conducted.

Chapter 2 reports on a study on the state of the art concerning collaboration in the curriculum of teacher education. The question central to this chapter was: *to what extent do the teacher education curricula in three teacher education institutes in the Netherlands pay attention to and aim to stimulate the development of community competence?* We interviewed heads of department, teacher educators and student teachers, observed meetings and analyzed study guides, portfolios and electronic learning environments. We investigated the intended, implemented and attained curriculum of three teacher education institutes. This study revealed that teacher education institutes deem it important to prepare their student teachers for collaboration in communities, but this aim is weakly conceptualized in the implemented and attained curriculum. This means that institutes do not pay explicit and systematic attention to collaboration. At the same time there are different types of groups which have the potential to increase the community competence of student teachers. These are *mentor groups*, in which general educational subjects are dealt with under the supervision of a teacher educator; *subject matter groups*, in which subject specific didactics are discussed under the supervision of a teacher educator; *reflection groups*, in which small groups of student teachers reflect on their teaching experiences at school; and *research groups*, in which student teachers collaborate in small groups on a small-scale research project.

Chapter 3 reports on the development of design principles that are aimed at improving the collaboration in different communities in teacher education. Different stakeholders have been interviewed, namely teacher educators, student teachers and experts on communities. Ideas from these interviews have been combined with ideas from the literature in order to arrive at sets of design principles. We did this by determining whether different design principles were relevant for the different types of group. The research question central to this chapter was: *Taking into account different stakeholders and the existing literature, what are the appropriate sets of design principles for promoting community development in different types of group in teacher education?* Design principles, aimed at group identity, shared domain and shared interactional repertoire have been developed by means of focus groups and interviews. Sets of design principles were developed for all types of group, some of which were already being applied by teacher educators and others were not. Some design principles were relevant for all types of group, like "by exchanging stories, students detect similarities." Other principles were not applicable to all types of group. For example, the principle "By inviting experts, the knowledge of the group is extended" was found applicable to the mentor group and subject matter group, but not to the reflection group and research group. This study shows the importance of involving different stakeholders when developing sets of design principles, as well as the importance of considering the nature of the group as a relevant factor.

After the development of design principles which could give direction to activities in teacher education, these were implemented in the four types of group and data were collected on the collaborative process within each group. During the analysis of these data attention has been given to a crucial precondition for good collaboration, namely regulation. Because student teachers play an active role in regulating their own collaboration they can give direction to that process. In **chapter 4** the regulation of collaboration in the four types of group is investigated. The research question of this study was: *How do student teachers regulate collaboration in different types of group in the context of a teacher education program?* By means of discourse analysis the regulation within each type of group was analyzed. This study took a dialogical perspective, which means that every action is seen as part of, and determined by, the activity in which it is situated. Three conclusions can be drawn from this study. First, the role of the teacher educator is crucial, as this has serious consequences for the role of the student teachers in regulation. This influence can be either positive or negative, either stimulating or hindering the active role of student teachers in the regulation of the group. A second conclusion is that different types of group regulate collaboration in different ways. For example, in the reflection group co-regulation was frequently applied, which means that more group members together give better direction to the collaboration. In the research group, on the other hand, usually just one person regulated during a specific phase. The third conclusion of this study is that regulative actions can have different functions, namely staying focused on a certain topic, moving to a new topic or moving to a new speaker.

From the literature (Cochran-Smith, Barnatt, Friedman, & Pine, 2009) and our data it appears that collaborative research can be demanding for student teachers. **Chapter 5** therefore reports on a detailed investigation into the research process of two small groups. More specifically, the processes of *elaboration* and *decision making* were studied. These processes give insight into the shared domain and the shared interactional repertoire of the group. The question central to this chapter was: *What role do elaboration and decision making play in the inquiry processes of research groups in teacher education?* Video observations were made and stimulated recall interviews conducted. From this study it appears that one research group consciously and meaningfully alternated between elaboration and decision making. Two group members were gate-keepers for elaboration; for example, discussing the pros and cons of different possible research topics. The other group member was gate-keeper for decision making; for example, by indicating that it was time to come to a decision. This group easily attained good outcomes and the group members were proud of their research process. The other research group spent less time on both elaboration and decision making and when they did do so it was by means of long, undirected discussions and quick, ad hoc decisions. The research process of this group was arduous and at the end of the process the group members had a negative image of "doing

research". The conclusion of this study is that both elaboration and decision making are necessary in a good collaborative research process. By engaging in elaboration and decision making in a thoughtful and meaningful way, a group can learn much about conducting research. This study of the processes of elaboration and decision making gives insight into how the shared domain and shared interactional repertoire of this type of group can be developed.

Based on the results of the four empirical studies, in **chapter 6** conclusions are drawn, and limitations and implications of the research are discussed. Four overarching conclusions are drawn on the basis of the four studies. *First*, collaboration is found to be important in teacher education, but this is not implemented in the curriculum in a systematic and explicit way. There are many activities in which student teachers collaborate, but this collaboration is usually not an explicit learning aim. The same goes for regulation of collaboration: student teachers are expected to regulate collaboration in groups but this is not given explicit attention.

The *second* general conclusion is that there are several possibilities to increase attention for the development of communities in teacher education. Within this dissertation we developed design principles that can be applied to different types of group in teacher education. In addition, a more conscious approach can be taken towards stimulating an active role of student teachers in the regulation of collaboration. When engaged in a research group, student teachers can be made aware of how they can consciously engage in elaboration and decision making.

The *third* general conclusion is that groups in teacher education differ from each other and that these differences have to be taken into account when communities are developed. This diversity in types of group is valuable, as it offers student teachers the opportunity to develop competences that can be of use within different types of group in schools.

The *fourth* general conclusion of this dissertation is that there are big differences between groups in the degree to which they are able to engage in good collaboration. That being so, teacher education needs to pay attention to learning to collaborate. This is even more important in the context of teacher education, as not only the learning process of the student teachers is at stake, but also the learning process of their (future) pupils.

The greatest limitation of this research is its small scale, so caution is needed in generalizing the results. At the same time, this small scale provided us with the opportunity to analyze our data in depth. Another limitation is that learning outcomes (in terms of community competence) of student teachers have only been investigated in the first study. Lastly, we have concentrated on the different types of group and more specifically the processes student teachers go through within these, giving little consideration to the role of the teacher educator.

In relation to these limitations, directions for future research have been determined. On the one hand, a large-scale experimental study would give insight into which design principles and recommendations are successful in improving the groups, as well as the role of the teacher educator. On the other hand, more in-depth, qualitative studies are desirable, aimed at obtaining more insight into collaboration processes and the roles of different group members.

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Publications

Scientific publications

Dobber, M., Akkerman, S.F., Verloop, N., Admiraal, W., & Vermunt, J.D. (in press). Developing designs for community development in four types of student teacher groups. *Learning Environments Research*.

Manuscripts submitted for publication

Dobber, M.*, Vandyck, I.*, Akkerman, S.F., De Graaff, R., Beishuizen, J., Pilot, A., Verloop, N., & Vermunt, J.D. (submitted). The development of community competence in the teacher education curriculum. *both authors should be considered first author.

Dobber, M., Akkerman, S.F.,Verloop, N., & Vermunt, J.D. (submitted). Regulation of collaboration in teacher education.

Dobber, M., Akkerman, S.F.,Verloop, N., & Vermunt, J.D. (submitted). Student teachers' collaborative inquiry: Small-scale research projects during teacher education.

Other publications

Lockhorst, D., Brouwer, P., Dobber, M., & Vandyck, I. (2008). Facilitating online learning conversations: Exploring tool affordances in higher education. [Book review: van der Pol, J. (2007). *Facilitating Online Learning Conversations: Exploring tool affordances in higher education.* Doctoral dissertation, Utrecht University, the Netherlands.] *Pedagogische Studiën, 85* (6), 480-482.

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Conference papers

Dobber, M., Akkerman, S., Verloop, N., & Vermunt, J. (2007, June). *Behoeften, problemen en wensen in de initiële lerarenopleiding [Needs, problems and wishes within initial teacher education]*. Paper presented at the Onderwijs Research Dagen (ORD), Groningen, The Netherlands.

Dobber, M.*, Vandyck, I.*, Akkerman, S., Graaff, R. de, Beishuizen, J., Pilot, A., Verloop, N., & Vermunt, J. (2009, April). *The Development of Cooperation and Social Competence in Teacher Education*. Paper presented at the 2009 Annual meeting of the American Educational Research Association (AERA), San Diego, CA. *both authors should be considered first author.

Dobber, M., Akkerman, S., Verloop, N., & Vermunt, J. D. (2009, August). *Moving beyond one type of community*. Paper presented at the 13th Biennial Conference of the European Association for Research on Learning and Instruction (EARLI), Amsterdam, The Netherlands.

Dobber, M.*, Vandyck, I.*, Akkerman, S., De Graaff, R., Beishuizen, J., Pilot, A., Verloop, N., & Vermunt, J. (2009, August). *The Development of Collaboration and Social Competence in Teacher Education*. Paper presented at the 13th Biennial Conference of the European Association for Research on Learning and Instruction (EARLI), Amsterdam, The Netherlands. *both authors should be considered first author.

Dobber, M., Akkerman, S., Verloop, N., & Vermunt, J. (2009, May). *Taking group differences into account while developing arrangements for communities in teacher education*. Paper presented at the Onderwijs Research Dagen (ORD), Leuven, Belgium.

Dobber, M., Akkerman, S., Verloop, N., & Vermunt, J. (2010, April-May). *Developing Groups within Teacher Education with a Community Perspective*. Paper presented at the 2010 Annual meeting of the American Educational Research Association (AERA), Denver, CO.

Dobber, M., Akkerman, S.F., Verloop, N., & Vermunt, J.D. (2011, April). *Optimizing Communities in Teacher Education*. Paper presented at the 2011 Annual meeting of American Educational Research Association (AERA), New Orleans, LA.

Roundtable presentation

Dobber, M., Akkerman, S.F., Verloop, N., & Vermunt, J.D. (2008, July). *Stimulating the development of social competence of student teachers using CSCL*. Roundtable at the 2008 Annual Conference of the Junior Researchers of the European Association for Research on Learning and Instruction (JURE-EARLI), Leuven, Belgium.

Poster presentations

Brouwer, P., Dobber, M., Vandyck, I., Akkerman, S., Brekelmans, M., De Graaff, R., Beishuizen, J., Nieuwenhuis, L., Pilot, A., Simons, R.J., Verloop, N., & Vermunt, J. (2008, June). *Creatief met concepten: De relaties tussen communities, samenwerking en sociale competenties [Creative with concepts: The relationships between communities, collaboration and social competence]*. Presented at the Onderwijs Research Dagen (ORD), Eindhoven, The Netherlands.

Dobber, M., Akkerman, S., Verloop, N., & Vermunt, J. (2010, September). *Designing learning communities within different types of groups in teacher education*. Poster presented at the biennial meeting of EARLI SIG 10 Social Interaction in Learning and Instruction and SIG 21 Learning and Teaching in Culturally Diverse Settings, Utrecht, The Netherlands.

Curriculum Vitae

Marjolein Dobber was born in Den Helder, the Netherlands on March 10th 1982. She attended secondary education at the Etty Hillesum College in the same city, where she graduated from in 2001. That same year she started the Master Educational Sciences at VU University Amsterdam. Marjolein's master's these centered on gender sensitivity of science teachers in secondary education. Following her 2005 graduation, she worked as a research assistant on several projects, including a project that saw her implementing, evaluating and redesigning a quality instrument for school teams.

Marjolein started as a PhD candidate in October 2006 at ICLON, Leiden University Graduate School of Teaching. Her dissertation project focused on collaboration in different types of student teacher groups during teacher education. This project was a part of a collaborative project which was involved in research on the development of communities of (student) teachers in different working and learning contexts. During this PhD project, she followed master classes on teaching and teacher education, qualitative analysis and educational design and curriculum development. She presented her research at national (ORD) as well as international conferences (EARLI, JURE, AERA). Furthermore, she was a member of the board of the division Teacher Education and Teacher Behavior of the Netherlands Educational Research Association.

Currently, Marjolein works as a teacher and researcher at the department Theory and Research in Education of VU University Amsterdam. Her research interests are communities (of learners) and dialogicality in collaboration.

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ICLON

Leiden University Graduate School of Teaching

PhD dissertation series

Hoeflaak, A. (1994). *Decoderen en interpreteren: een onderzoek naar het gebruik van strategieën bij het beluisteren van Franse nieuwsteksten.*

Verhoeven, P. (1997). *Tekstbegrip in het onderwijs klassieke talen.*

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Uhlenbeck, A. M. (2002). *The development of an assessment procedure for beginning teachers of English as a foreign language.*

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