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## **Collaboration in groups during teacher education**

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## **Chapter 3**

### **Developing designs for community development in four types of student teacher groups<sup>3</sup>**

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<sup>4</sup>.

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

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