

# Community building of (student) teachers and a teacher educator in a school–university partnership

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**Abstract** School–university partnerships (SUPs) are considered a way of improving teacher education. For the successful implementation of such partnerships, cooperation between the different stakeholders is of crucial importance. Therefore, most partnerships are organised in short- and long-term teams, which are usually composed of teachers, student teachers and representatives of the university faculty. This study focused on the collaboration process of a team of modern language teachers who work and learn together in a teacher community. The aim of this study was to investigate how to design a learning environment that stimulates community development in these teams, applying the cooperative learning model of Johnson and Johnson in Learning together and alone: cooperative, competitive, and individualistic learning. Allyn and Bacon, Boston, (1999). Based on this model, design principles were developed to stimulate community development in this group. Community development was measured through observations of the meetings of the group, using the community model of Admiraal, Lockhorst and van der Pol described in this issue. The five principles found relevant in this SUP team were profiling the group as an identity, equivalent cooperation, rotating the chairperson, reflecting on the collaboration and giving feedback on the products made in the group.

**Keywords** Community development · School–institute partnerships · Teacher communities · Teacher education · Teacher professional development

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## Introduction

Over the last few decades, teacher education programmes have involved school–university partnerships (SUPs) as a response to international critics on the effect of teacher education on teaching practice (Darling-Hammond 2000; Ginsberg and Rhodes 2003; Grossman 2008). Those partnerships focus on both the education of student teachers and the professional development of teachers (Castle et al. 2006; Ridley et al. 2005). In the Netherlands, the implementation of school-university partnerships started only recently, pressured by the threatening shortage of teachers (Lunenberg et al. 2000). At this point, the variation in SUPs is high, ranging from training with and in the school, to training by the school (Maandag et al. 2007). Consequently, there is as yet no consensus on how to develop a learning environment to support the learning process of both student teachers and teachers in such a partnership.

From the international literature on SUPs and, more specifically, on professional development schools (Holmes Group 1986), we can conclude that the collaboration process between the different stakeholders is of utmost importance (Lefever-Davis et al. 2007). Structural partnerships alone are not sufficient; meaningful collaboration between school and university is a prerequisite to the education of student teachers and the professional development of teachers (Lefever-Davis et al. 2007; Smedley and van Rooy 1996). Therefore, most SUPs are organised in short- and long-term teams, which are usually composed of teachers, student teachers and representatives from the university faculty (Metcalf-Turner and Fischetti 1996). However, most literature on collaboration in SUPs has focused on what we call the macro-level: the relationship between the school and the university in which the partnership is studied as a community of teachers, student teachers, pupils, management, parents, teacher educators, university staff and other stakeholders. Research in this area is concerned with the development of the partnership and focuses on variables such as roles, and responsibilities (e.g. Grossman 1994), common goals (e.g. Kochan and Kunkel 1998), prior history (e.g. Lefever-Davis et al. 2007), different cultures (Goodlad 1993) and other variables supporting or undermining the effectiveness of a school-university partnership.

Less is known about the collaboration within the teams: the micro-level of the community in the school in which student teachers, teachers and teacher educators participate on a daily basis. Literature on SUPs also using the micro-level of the group as a unit of analysis focuses mainly on the learning process of the student teachers (e.g. Buitink 2009), the activities of the teacher educator (van Velzen and Volman 2009), identity construction (Trent and Lim 2010), etc. This implies that they do not focus on the collaboration process or community development in these situations. Additionally, we follow the reasoning of Firestone and Fisler (2002, p. 450) that “a micropolitical perspective is a useful way to view such partnerships” and “the professional community ideal is more feasible for subunits within partnerships than for whole partnerships”.

In this article, we focus on the collaboration process of a team of student teachers, teachers and a teacher educator from the community perspective of Lave and Wenger (1991). We present a theoretical framework and a case study in which we study the community development process of a group of modern language teachers who work and learn together for one school year. As this study is part of a larger design-based research project, the aim was to develop, implement and evaluate design principles to stimulate the community development of this group. In the following sections, the casestudy and theoretical framework is described. The community model by Admiraal, Lockhorst and van der Pol (this issue) is presented as a descriptive framework for describing (changes in) the

*level* of community of a group of teachers. To describe the stimulation of community *development* in the teacher community, we used the Learning Together model of Johnson and Johnson (1999) as a source of inspiration to formulate design principles.

### Case study under investigation

In the Netherlands, SUPs are a form of learning in the workplace in which student teachers learn according to the principle of “learning through participation in real, meaningful practices” (ten Dam and Blom 2006, p. 649). Together with the teacher educator of the university and the teachers of the school, student teachers form a community of practice in which they collaborate with and learn from, and with, each other.

The case study under investigation was part of a postgraduate teacher education institute. Students enrolling in such a program have already obtained a Master’s degree in a relevant school subject. The program consists of a 1-year teacher training course; half of the year 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. Students spend 1 or 2 days a week at the institute, as well as performing activities for the institute at home or at school. The school under investigation provided possibilities for internship for the student teachers of the teacher education program, but no official school–university partnership was accomplished.

This case study consisted of a group of teachers, student teachers and a teacher educator, who worked together to improve the pedagogy of modern languages and to develop series of lessons that are characterised by active learning situations. This group was chosen because it was the only project in our teacher education programme that met our demands most adequately. Our most important demand was the participation of teachers, student teachers and a teacher educator. Additionally, we wanted a group to start voluntarily without any intervention of the school management or teacher education institute. Finally, we selected this group because it maintained a developmental philosophy, meaning that it was not the intention to ‘educate’ the student teachers but to develop as professionals in interaction with each other and with the environment. The group had its origin in the school year prior to the start of the project. The teacher educator functioned as an educator at the university and, at the same time, as a teacher of French at the particular school. In cooperation with another teacher of French, they developed lesson series to improve their teaching. Other language teachers were interested in their work and wanted to join the collaboration. At that point, the management of the university and the school wanted to attract student teachers to maximise the effect of the collaboration. It was believed that teachers, as experts in practice, and student teachers, as experts in new learning theories, could be complementary forces and stimulate each other to learn. Teachers can benefit from increased knowledge, more collegial interaction and leadership skills (Sandholtz and Merseth 1992), while the student teachers can benefit from the experience of the teachers and the increased theory–practice link. To stimulate this initiative, the management of the school decided to give the participants of the group a time and place to collaborate with each other. The project lasted for one academic year. During the first 4 months, the group members met once a week. In the second half year, the management of the school decided not to facilitate the collaboration of this group anymore. As a consequence, the group persisted in their goals and met in their spare time, diminishing their meeting time to once a month. At the end of the school year, the group presented a document for other modern

language teachers with the developed and implemented series of active lesson plans. During the time of the project, two students left the school to finish their internship at another school. For comparison, this case study could be perceived as a partner model (Buitink and Wouda in Maandag et al. 2007), meaning that the school is responsible for a part of the teacher education. Experienced teachers are teaching courses, supervising student teachers and training the other supervisors working in the school. The training institute provides instruction in the subject and the more conceptual themes in the course.

### Teacher communities

The cooperation process for this case study was investigated from a community perspective. In the Dutch context, student teachers in a SUP “participate in school practice in a way which can be described as legitimate peripheral participation in a community of practice, a community that acts as a living curriculum for the apprentice” (van Velzen and Volman 2009 p. 347). According to Wenger (1998), communities of practice are defined by combining the three elements of a sense of joint enterprise, mutuality, and a shared repertoire. These three elements are combined with the descriptions of communities by Bellah et al. (1985) and Grossman, Wineburg and Woolworth (2001) into the community model of Admiraal et al. (this issue) A teacher community is defined 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 shared interactional repertoire. Group identity is described as mutual engagement that binds teachers together in a social entity. Shared domain is defined as a joint enterprise as understood and continually negotiated by its members. Finally, shared interactional repertoire is characterised by a shared practice and beliefs in how teachers in a group interact. These three dimensions consist of 19 indicators (see Table 1). Group identity consists of identification, multiple perspective contribution, mutual trust and responsibility, social ties, emotional safety, spiritual bond, sense of collectivism, neighbourliness and co-worker support. Shared domain is composed of the four indicators of commitment to domain, common ground, collective goal and shared knowledge. Shared interactional repertoire is concerned with intellectual building, regulation of interaction, role taking, dynamic effort, dynamic position and interactional norms.

To describe the development of a community, the community model of Admiraal et al. (this issue) differentiates three markers:

- Limited. The community processes are characterised by limited feelings of group identity, feeling, and some degree of shared patterns, procedures and willingness to be active in the domain.
- Moderate. The community processes are characterised by consciousness of the group identity and development of collective activities.
- Strong. The community processes are balanced, shared and focused on a shared domain and feelings of group identity.

In this study, we focused on the community behaviour of the group. Therefore, to measure community development, we used only the indicators which are observable in groups, namely, identification, multiple perspective contribution, mutual trust and responsibility, social ties, commitment to domain, common ground, collective goal, shared knowledge, intellectual building, regulation of interaction, role taking and dynamic effort. The community level of the group was measured on several occasions to see whether

**Table 1** Dimensions and indicators for the community model

Dimension	Indicators
Group identity	Identification Multiple perspective contribution Mutual trust and responsibility Social ties Emotional safety Spiritual bond Sense of collectivism Neighbourliness Co-worker support
Shared domain	Commitment to domain Common ground Collective goal Shared knowledge
Shared interactional repertoire	Intellectual building Regulation of interaction Role taking Dynamic effort Dynamic position Interactional norms

change in level occurred. Dimensions, indicators and markers are used in combination to describe how, in each of the three phases, the community behaves on each indicator. A summary of the dimensions and indicators is found in Table 1.

## Design principles

This case study is the first part of a design-based research project consisting of three cycles of design, implementation and evaluation. The result of design-based research is the formulation of design propositions, which offer heuristic guidelines as described by van den Akker (1999):

If you want to design intervention X for purpose Y in context Z, then you are best advised to give that intervention the characteristics of C and do that via procedures P because of theoretical arguments T and empirical arguments E. (p. 94)

To stimulate community development, we developed design principles, which focused on cooperative learning. According to Summers et al. (2005), cooperative learning is, next to connectedness, one of the main predictors for a community. The most known and studied theory of cooperative learning is the Learning Together model of Johnson and Johnson (1999). The success of this model can be ascribed to its high external validity and generalisability to a diversity of subjects, settings, age levels, nationalities and cultural backgrounds (Johnson and Johnson 1998). The Learning Together model is less prescriptive than other models and therefore provides teachers with a flexible conceptual framework for planning cooperative learning according to their circumstances, needs and contexts (Ghaith 2003). Therefore, we used this framework to develop our design principles. Johnson and Johnson

(1999) defined five conditions under which cooperative learning is effective: promotive interaction, individual accountability, interpersonal skills, group processing and positive interdependence. Based on their definitions and characteristics, these five conditions were elaborated and specified for this situation into a set of 14 design principles. We used the conditions of Johnson and Johnson as heuristic guidelines and adapted them to the specific characteristics of this type of group, such as its heterogeneous character. Additionally, we hypothesised how these design principles could affect the community level of the group. For example, Johnson and Johnson (1999) defined promotive interaction as individuals encouraging and stimulating each other to complete tasks and reach the group goals. Group members help each other by exchanging resources, providing constructive feedback and challenging each other. The first five design principles (Table 2) combined these characteristics with the heterogeneous character of the group and the different perspectives of the group members. The sixth design principle is derived from the second condition of individual accountability in which each individual is supposed to contribute to the group goals and is responsible for his or her contribution to the group product. The third condition is the appropriate use of interpersonal and group skills. Group members must get to know and trust each other, communicate accurately and unambiguously, and resolve conflict constructively. Design principles 7, 8 and 9 focus on learning to know each other and improving interpersonal and group skills in the hope that this results in more trust and better communication. The fourth condition is group processing, which means that groups should reflect on how well they are functioning. However, to improve the interaction within the group, an additional design principle was needed so that the cooperation is not only discussed ad hoc but also facilitated by determining norms and values beforehand. The final condition is positive interdependence, which exists when participants perceive that they are linked with other group members in such a way that the group cannot succeed unless the other group members succeed also. There are different ways to reach positive interdependence, including goal, reward, resource, role, task, identity interdependence, etc. In this study, we focused on goal, task and identity interdependence to stimulate shared goals, a common group identity, and appreciation for each others' knowledge and strengths. Table 2 presents these design principles coupled with the three dimensions and the 12 observed indicators of the community model. This table can be interpreted as follows: *If the first design principle is implemented, we assume a positive effect on the indicators of multiple perspective contribution, mutual trust and responsibility, social ties, collective goal and shared knowledge.* In this article, we describe whether and how these assumed effects hold for a community of (student) teachers and a supervisor in a SUP.

The central research question in this study is: What design principles contribute to the development of communities of student teachers, teachers and supervisors in a school-university partnership? This research question is divided in two subquestions:

- What design principles for the development of communities are feasible for the community in a school-university partnership?
- Are these design principles effective for the community in a SUP to develop?

## Method

### Participants

The case study under investigation involved a group of modern language teachers, student teachers and a teacher educator. More specifically, the group consisted of seven

**Table 2** Design principles and their proposed effect on the indicators and dimensions

Conditions for cooperative learning (Johnson and Johnson)	Design principle	Predicted effect on indicators (Admiraal et al.)	Predicted effect on dimensions of the community model (Admiraal et al.)
Promotive interaction	<ol style="list-style-type: none"> <li>1. It is emphasised that everyone is equal so that both student teachers and teachers can learn from each other and help each other to reach the group's goals.</li> <li>2. Group members are stimulated to challenge each other by making use of the different perspectives of the participants.</li> <li>3. It is made clear to every group member that every participant has a different perspective and is stimulated to exchange each other's definition of important concepts.</li> <li>4. Group members are asked to give feedback on each other's products.</li> <li>5. Group members are stimulated to exchange resources.</li> <li>6. Every group member is obliged to contribute to the products and goals of the group.</li> </ol>	<p>Multiple perspective contribution                      Mutual trust and responsibility                      Social ties                      Common goals                      Shared knowledge</p> <p>Multiple perspective contribution                      Intellectual building                      Shared knowledge</p> <p>Common ground                      Shared knowledge</p> <p>Shared knowledge</p> <p>Shared knowledge</p>	<p>Group identity                      Shared domain</p> <p>Group identity                      Shared domain</p> <p>Shared domain</p> <p>Shared domain</p> <p>Shared domain</p>
Individual accountability	<ol style="list-style-type: none"> <li>6. Every group member is obliged to contribute to the products and goals of the group.</li> </ol>	<p>Dynamic effort                      Commitment to domain                      Common goal                      Shared knowledge</p>	<p>Interactional repertoire                      Shared domain</p>

Table 2 continued

Conditions for cooperative learning (Johnson and Johnson)	Design principle	Predicted effect on indicators (Admiraal et al.)	Predicted effect on dimensions of the community model (Admiraal et al.)
Interpersonal and group skills	<p>7. The group learns to know each other's qualities, expectations and concerns and is stimulated to take these into account.</p> <p>8. Group members were stimulated to improve their basic interpersonal skills (i.e. listening, asking questions, providing feedback, summarising, etc.).</p> <p>9. Group members were stimulated to improve their group skills, i.e. leadership, negotiation, decision-making, problem-solving, flexibility, etc.).</p>	<p>Multiple perspective contribution Mutual trust and responsibility Social ties</p> <p>Social ties Intellectual building</p>	<p>Group identity</p> <p>Group identity Interactional repertoire</p>
Group processing	<p>10. The group formulates norms and values to interact with each other.</p> <p>11. Group members are asked to reflect on the collaboration of the group.</p>	<p>Social ties Regulation of interaction</p> <p>Regulation of interaction</p>	<p>Group identity Interactional repertoire</p> <p>Group identity Interactional repertoire</p>



**Table 2** continued

Conditions for cooperative learning (Johnson and Johnson)	Design principle	Predicted effect on indicators (Admiraal et al.)	Predicted effect on dimensions of the community model (Admiraal et al.)
Positive inter-dependence	<p>12. Identity interdependence is stimulated by profiling the group as a unit.</p> <p>13. Task interdependence is stimulated by providing the group with authentic tasks in which both the knowledge of student teachers and teachers is needed to accomplish the task.</p> <p>14. Goal interdependence is stimulated by negotiating shared goals and defining a common goal.</p>	<p>Identification</p> <p>Multiple perspective contribution</p> <p>Commitment to domain</p> <p>Common goal</p> <p>Shared knowledge</p> <p>Commitment</p> <p>Common goal</p>	<p>Group identity</p> <p>Group identity</p> <p>Shared domain</p> <p>Shared domain</p>

participants: two student teachers of English, one student teacher of French, one student teacher German, one teacher of English, one teacher of French and also the teacher educator taught French. Two student teachers were preservice teachers who followed an internship at this high school. The other two student teachers were inservice teachers who had a paid job at this school, next to their educational program. After 4 months, the two preservice teachers finished their internship and left the school.

### Procedure

The design principles (Table 2) were implemented in co-design with the responsible teacher educator according to the pragmatic design paradigm (Visscher-Voerman and Gustafson 2004). Before the project started, the educator and researcher met two times to discuss the design principles and propose activities. During the project, every meeting of the group was prepared and evaluated by the educator and researcher, with the teacher educator being responsible for the activities and the researcher monitoring the implementation of the design principles. At the end of the first half of the time period of the project, a questionnaire was administered to the student teachers and teachers about the procedure of the meetings, the role of the educator, the structure of the meetings, the products, the electronic learning environment, the collaboration in the group and the learning outcomes. The results of this questionnaire were summarised and discussed during the following meeting. Based on the meetings between the educator and the researcher, the questionnaire and the discussion in the group, the activities were continuously adapted during the process of implementation. An overview of activities, which were proposed by the teacher educator, is found in Table 3.

### Data sources and analysis

The group had 20 meetings, of which 14 meetings were videotaped. Because of technical problems, only 10 tapes were available for analysis. These 10 tapes were used to analyse whether the teacher educator implemented the design principles and activities as intended. For each tape/meeting, the first author described the activities of the teacher educator related to the 14 design principles. To determine that a design principles was feasible in the school–university project, this design principle had to be entirely implemented as intended. Therefore we analysed therefore the specific activities of the teacher educator.

From those tapes, 17 fragments of approximately 10 min each were selected to measure whether the implemented design principles were effective in stimulating community development. These 17 fragments consisted of 12 fragments of the first period during which the group met once a week and five fragments of the second semester during which they met once a month. These fragments were selected, based on the content of the meeting and the group composition. As this study focused on content-based whole-group community development, we did not consider fragments in which the group worked in sub-groups, fragments in which the group consisted of less than three persons, and fragments in which the group talked about content not relevant for the project. The resulting 17 fragments covered the three categories of activities of task execution (4), logistical discourses (4) and discussion (9). These 17 fragments were analysed at their community level using the observation protocol of Lockhorst et al. (2008). To establish reliability and validity, this measurement instrument was used by the first author of the article by Lockhorst et al., the first author of this article and the other two main researchers of the larger project team

**Table 3** Design principles and interventions

Design principles	Activities
1. It is emphasised that everyone is equal so that both student teachers and teachers can learn from each other and help each other to reach the group's goals.	Modelling of the educator. Educator explicitly states that the participants should treat each other as equal learners. Educator explicitly states that it is not the goal of the group only to educate the student teachers but also to professionalise the teachers.
2. Group members are stimulated to challenge each other by making use of the different perspectives of the participants.	Educator asks student teachers and teachers to give their view on the problem. The educator asks the student teachers to challenge the opinions of the teachers, based on the theoretical framework they learned and <i>visa versa</i> .
3. It is made clear to group members that every participant has a different perspective and is stimulated to exchange each other's definition of important concepts.	At the beginning of every meeting, the subject is explained and the important concepts are discussed until common ground is reached.
4. Group members are asked to give feedback on each other's products.	At each meeting of the group, the products of the group are discussed and reflected on.
5. Group members are stimulated to exchange resources.	A summary of each meeting with the end products is put on the group page in the electronic environment. The participants are asked to react to the summary and to the products they developed.
6. Every group member is obliged to contribute to the products and goals of the group.	Every group member receives a specific task and is expected to perform this task and share their outcomes. The educator pays attention to the contribution of every participant of the group and asks silent participants to join the discussion.
7. The group learns to know each other's qualities, expectations and concerns and is stimulated to take these into account.	At the first meeting of the group, a game is played to identify each others' strengths. Furthermore, expectations and problems are discussed.
8. Group members were stimulated to improve their basic interpersonal skills (i.e. listening, asking questions, providing feedback, summarising, etc.).	Modelling of the educator. Discussing and evaluating the social process when conflict occurs.
9. Group members were stimulated to improve their group skills (i.e. leadership skills, negotiation, decision-making, problem-solving, flexibility, etc.).	Modelling of the educator. Discussing and evaluating the social process when conflict occurs.
10. The group formulates norms and values to interact with each other.	In the first group meeting, the group formulates standards about the interaction between members. In the first group meeting, the group plans the meetings and the content of the meetings for the next half year. Additionally, the structure of the meetings is decided.
11. Group members are asked to reflect on the collaboration of the group.	After each meeting, it is evaluated. This informal evaluation can be about the content, the structure or the collaboration process. After 4 months, a formal evaluation is conducted. The participants are asked to fill in a questionnaire about the project. The outcomes of the questionnaire are discussed in the following meeting.
12. Identity interdependence is stimulated by profiling the group as a unit.	Group members are asked to embellish the group page in the electronic environment, including a short summary introducing them as one group. Group members give presentations to the dean of the school, to their colleagues (teaching the same subject) and to other staff of the school. Group members participate in two symposia outside the school.

**Table 3** continued

Design principles	Activities
13. Task interdependence is stimulated by providing the group with authentic tasks in which the knowledge of both student teachers and teachers is needed to accomplish the task.	During the meetings, the group members develop a concrete product, which is authentic and meaningful for them. Each student teacher is partnered with a teacher. The task is formulated so that both the knowledge of the student teacher and the teacher is needed to accomplish the task.
14. Goal interdependence is stimulated by negotiating shared goals and defining a common goal.	In the first meeting, the individual goals are listed and shared goals are defined. On a regular basis, these goals are evaluated and adapted.

of which this research is part of. Throughout three rounds of independent rating and subsequent discussion, fragments of each project were scored at the community level until full agreement was reached. This procedure was considered to be sufficiently reliable.

For each fragment, a description was made of all activities of the group, categorised into the 12 observable indicators of the community model, as described above. Each fragment of 10 min was first observed entirely and relevant utterances, gestures and activities were written down in the matching indicators. Next, the fragment was observed again for each dimension separately to identify for the presence of the indicators. The descriptions included both verbal utterances and non-verbal gestures. Based on the qualitative descriptions, for each fragment, the group was positioned on a scale of 1–3 per indicator, corresponding to the limited, moderate and strong phase of community development. To measure the development of the community, the fragments in the beginning of the project (the first three meetings) were compared with the fragments at the end of the project (the last three meetings).

## Results

### Implementation of design principles

In this section, we discuss the first subquestion: “What design principles are feasible in a school-university partnership? To answer this research question, the videotapes of the 10 meetings were used to determine the level of implementation. For each meeting, the activities of the teacher educator were described to determine whether and how the design principles were implemented. Table 4 presents the design principles which were implemented and shows in how many meetings the specific design principle was implemented.

Design principles 3, 8, 9, 10 and 13 were not implemented. We now discuss the way the other design principles were implemented.

Design principle 1 (“It is emphasised that everyone is equal so that both student teachers and teachers can learn from each other and help each other to reach the group goals.”) was implemented in seven of the 10 meetings. During the beginning of the project, the teacher educator emphasised often that the goal of the group was not to educate student teachers but to learn from teachers, student teachers and the educator; both student teachers and teachers should be seen as equal partners in learning. The teacher educator also asked the two subgroups what they could learn from each other.

During the project, an informal evaluation was held which was important in relation to this design principle. Initiated by one of the student teachers, group members stated that

**Table 4** Design principles implemented with the number of meetings in which these principles were implemented

Design principle	Number of meetings
1. It is emphasized that everyone is equal so that both student teachers and teachers can learn from each other and help each other to reach the group's goals.	7
2. Group members are stimulated to challenge each other by making use of the different perspectives of the participants.	6
4. Group members are asked to give feedback on each other's products.	8
5. Group members are stimulated to exchange resources.	9
6. Every group member is obliged to contribute to the products and goals of the group.	6
7. The group learns to know each other's qualities, expectations and concerns and is stimulated to take these into account.	5
11. Group members are asked to reflect on the collaboration of the group.	4
12. Identity interdependence is stimulated by profiling the group as a unit.	7
14. Goal interdependence is stimulated by negotiating shared goals and defining a common goal.	6

they had issues with the formal status and position of their colleague group members. Student teachers felt that they were expected to see the teachers and teacher educator as equivalent partners during the group meetings but as formal leaders outside of the group. This led her to conclude that she was not only seen as the informal leader of the group, but also as an expert and as a formal authority. As a consequence, she felt that she was not given the opportunity to learn herself. To support the teacher educator in her learning process and to diminish the effects of hierarchical positions on the learning process of the group, it was decided to rotate the role of chairing the meetings. In this way, the role of the leader was detached from the role of the teacher educator as an expert. Secondly, student teachers and teachers would recognise each other's expertise in the theoretical and practical field. Finally, this intervention seemed to improve the feeling of project ownership.

Design principle 2 ("Group members are stimulated to challenge each other by making use of the different perspectives of the participants.") was implemented in six meetings, including the first and last three meetings of the project. In the first three meetings, the teacher educator made explicit how both subgroups could challenge each other. In the last three meetings, the teacher educator only used the strategy of modelling by asking both the student teachers and teachers to give their perspectives on the problem.

Design principle 4 ("Group members are asked to give feedback on each others' products.") was implemented in eight meetings. In six of these, the feedback was concerned with the products made during that meeting. In the other two instances, the feedback focused on the lesson materials made in a previous meeting and the try-out of these lessons in (student) teachers' classes between the meetings.

Design principle 5 ("Group members are stimulated to exchange resources.") was implemented in nine meetings, although not in the activities proposed initially by the teacher educator. The activities focused on the modelling of the educator by exchanging resources and by asking the other group members to deliver their materials to each other through the electronic environment. In spite of extensive ICT training and support, the

group persisted in using their offline mailboxes and face-to-face meetings to exchange resources.

Design principle 6 (“Every group member is obliged to contribute to the products and goals of the group.”) was implemented in six meetings, in which the educator focused mainly on discussing the outcomes of the tasks.

Design principle 7 (“The group learns to know each other’s qualities, expectations and concerns and is stimulated to take these into account.”), was implemented in five meetings. In the first meeting, a game was played to help participants to get to know each other and each other’s strengths. In addition, the needs and expectations of the group members were discussed. The educator also implemented this principle in four other meetings, three of which were at the beginning of the project. In these meetings, the teacher educator spent a lot of attention discussing the needs and expectations of the group members.

Design principle 11 (“Group members are asked to reflect on the collaboration of the group.”) was implemented in four meetings when the group held informal evaluations about the structure and content of the task and the interaction between the group members. The formal evaluation was held after 4 months, when the participants were asked to fill in a questionnaire. The results were presented in the following meeting. No further reflection occurred in that meeting.

Design principle 12 (“Identity interdependence is stimulated by profiling the group as a unit.”) was implemented in seven meetings. In four of the meetings, the educator started a discussion about the qualities and the future of the group. In two meetings, the group prepared to profile itself at conferences and presentations to the school. The teacher educator added another intervention, which was not intended to stimulate identity interdependence, that had an important influence on the profiling of the group. In the beginning of the project, the group met in a separate room so that participants would not be disturbed by other staff. After approximately 2 months, the group asked to move to the school’s canteen, initially because the group found it too time-consuming and difficult to search for a room that was available, but eventually to let other staff see what we are doing together.

Design principle 14 (“Goal interdependence is stimulated by negotiating shared goals and defining a common goal.”) was implemented in six meetings. In the first meeting, the teacher educator listed the expectations and goals of the group members. In two meetings, the educator asked whether the individual goals changed during the project and whether these were met. In three meetings, she asked the group members whether the subject of that meeting corresponded to the expectations of the group.

## Community development

To answer the second subquestion concerning whether these implemented design principles were effective in stimulating community development, we describe in this section the differences in community level at the beginning and the end of the project and relate this development to the implemented design principles. The results are described using the three dimensions and the 12 observable indicators of the community model, specified for the collaborative categories ‘discussion’, ‘task execution’ and ‘logistical discourse’ when relevant. The results are summarised in Table 5.

For five design principles, an effect on one or more indicators for the community level could be identified. Design principle 1 on equivalent cooperation had an important effect on the indicators *social ties* and *role taking*. The activities concerning social ties shifted from moderate to strong. During the project, there was a positive atmosphere and an

**Table 5** Effects of design principles

Design principle	Effect on indicator
1. It is emphasised that everyone is equal so that both student teachers and teachers can learn from each other and help each other reach to the group's goals.	Social ties (from moderate to strong) Role taking (from moderate to strong)
6. Every group member is obliged to contribute to the products and goals of the group.	Dynamic effort (from accepting differences in effort to equally divided effort)
7. The group learns to know each other's qualities, expectations and concerns and is stimulated to take these into account.	Social ties (from moderate to strong)
11. Group members are asked to reflect on the collaboration of the group.	Regulation of interaction (from teacher-dominated regulation to group regulation)
12. Identity interdependence is stimulated by profiling the group as a unit.	Identification (from limited to moderate)

informal setting and relationships were built. At the end of the first half of the project, the positive atmosphere increased and the informal, polite atmosphere shifted to a friendly, amicable sphere. This shift was seen most clearly in the discussion fragments. The same development was found for the indicator role taking. At the beginning of the project, the teacher educator had the role of chairperson and leader. In informal evaluations, this was made explicit and accepted by the group, which is characteristic of role taking in the moderate phase. At the end of the project, group members took up other roles spontaneously, not only in relation to chairing meetings (facilitated by the rotating chairmanship principle), but also in relation to the roles of critical friend, time manager, regulator of interaction and devil's advocate.

Design principle 6 ("Every group member is obliged to contribute to the products and goals of the group.") influenced a change in the behaviour of the group members on *dynamic effort*. Although the behaviour of the group members was categorised in the strong phase, both at the beginning and the end of the project, a change in behaviour was seen in the qualitative analysis. In the beginning, differences in effort were accepted while, at the end, dynamic effort was equally divided.

Further, we found that, when the group learns to know each other's qualities, expectations and concerns and is stimulated to take these into account (design principle 7), the social atmosphere of the group improved.

Design principle 11 ("Group members are asked to reflect on the collaboration of the group.") did change the *regulation of interaction* from teacher-dominated regulation to group regulation. All fragments scored strong on regulation of interaction. In general, the teacher educator regulated the interaction and this was accepted by the group members. Looking more closely at the qualitative descriptions of the behaviour of all group members, a change in behaviour was noticed. In the beginning, the interaction was completely regulated by the teacher educator, followed by a period of smooth interaction in which no one regulated the interaction, resulting in the final phase of the project being characterised by smooth interaction or regulated by all group members.

Finally, design principle 12 on stimulating identity interdependence had an effect on the indicator *identification*, which developed from limited to moderate. In the beginning of the project, group members did not identify with the group as a whole, but they did not refer to the group as 'our' group, they did not refer to the history of the group by making inside jokes and they did not profile themselves as one group to other groups or school staff. At

the end of the project, group members told inside jokes, reacted against other groups, talked about their group in terms of ‘we’ and emphasised the strengths and qualities of ‘their’ group. For this indicator, a particular relationship could be found with the three categories of ‘discussion’, ‘task execution’ and ‘logistical discourse’. The shift from the limited to the moderate phase was particularly found in the discussion fragments. In the fragments of task execution and logistical discourse, the activities were all categorised in the limited phase of community, irrespective of the time frame of these fragments.

The other design principles seemed not to have an effect at the community level. To complete the picture, the indicators that did not show any development are discussed briefly.

The activities for the indicator *commitment to domain* were mainly categorised in the strong phase, both at the beginning and end of the project. The group members perceived the task as valuable and relevant and they were all committed to the task at hand.

For *multiple perspective contribution* and *intellectual building*, the activities were mainly scored in the moderate phase. The group welcomed each others’ ideas, listened to each other and appreciated the contributions of each group member. However, they neither built further on each other’s contributions nor connected them.

For *mutual trust and responsibility*, we had too few descriptions of the group’s behaviour to make an accurate judgement about the development of this indicator. For the indicators *common ground*, *collective goal* and *shared knowledge*, no consistent patterns were found. The activities were evenly categorised in the moderate and strong phase during the project.

## Discussion and conclusion

This study focused on the development of a learning environment to stimulate community development in a group consisting of student teachers, teachers and an educator in a school–university partnership. To answer the main research question (What design principles contribute to the development of communities of student teachers, teachers and supervisors in a school-university partnership?), we analysed which design principles were implemented and their effect on the community level of the group. We showed that there are indications that the learning environment for stimulating community development in a SUP involves the following five principles: equivalent cooperation, obligation to contribute for all members, learning to know each other, reflecting on the collaboration and profiling the group as a unit. We further discuss possible explanations for the effects found.

The feeling of equivalent cooperation played a central role in this group. After the teacher educator and student teachers expressed their discomfort about this concept, the idea of rotating the chairperson was introduced. This activity made the participants aware of their functioning and place in the group. As a result, they developed their identity as a group member, took on other roles and improved the social atmosphere of the group.

The design principle concerned with activities for learning to know each other also had an effect on the indicator *social ties*. This rather seems logical as the group members learn the boundaries of each group member. However, it is interesting to analyse the design principles which were aimed at improving the social atmosphere but were not implemented. Although no rules and norms were made explicit and the participants were not stimulated to improve their interpersonal and group skills, no conflict occurred. Perhaps the student teachers and teachers already had the necessary interpersonal and group skills to participate in a community.



Still, concerning equivalent cooperation, we think that it is important to make a distinction between the formal role of an authority as leader and the spontaneous role of a group member as a leader based on his/her expertise. This corresponds to Wenger's (1998) concepts of external and internal leadership. "All communities of practice depend on internal leadership, but healthy communities do not depend on the leadership of one person" (Wenger et al. 2002, p. 36).

Design principles 6 and 11 on contributions to the products and goals, and reflection on the collaboration, showed some similarities in their effect on *regulation of interaction* and *dynamic effort*. The regulation shifted from teacher-dominated regulation of interaction to group regulation. Similarly, group effort shifted from accepting differences in effort to equally dividing effort. Both indicators showed an increasing commitment of the group, both in process and product. By stimulating reflection on the collaboration and discussion of the products, the teacher educator responded directly to the needs of the participants. As a consequence, it seemed that the perceived ownership of the project by the group members was stimulated. Participants took more responsibility for the success of the collaboration and the quality of the lesson plans. However, this interesting change in behaviour was not seen in the indicator *commitment to domain*. The implications of our results for this model are discussed in the next section.

Finally, we found that profiling the group contributed to the feeling of identification. We have to remark that the group members knew each other only from previous experiences but never had collaborated as a group. We have to consider the possibility that growth in identification is a natural phenomenon when group members get to know each other and have more experience in the collaboration. However, this group was very engaged in profiling themselves both internally and externally. Internal profiling consisted of profiling the group within meetings and emphasising the relevance and importance of the collaboration. The group profiled themselves also as a group outside the meetings, both in conferences and in statements to other groups within the school.

### Community model

Although this model was found to be a useful method to describe community development, some remarks can be made. First, as said in the previous section regarding the indicators of regulation of interaction and dynamic effort, only a change was noticed when looking at the qualitative analysis. At the start, both indicators already reflected behaviour that could be categorised in the strong phase of the community. Additionally, most indicators were scored in the moderate and strong phases, which can imply that the three phases are not distinctive enough to describe the community development of a school–university partnership. Secondly, we found a change in teacher-directed behaviour to group-directed behaviour for both the regulation and dynamic effort indicators, representing an increase in commitment of the participants to both process and product. However, this did not seem to correspond to the pattern found for the indicator of commitment to domain. This could be related to the fact that the indicators of regulation of interaction and dynamic effort focus more on the process of collaboration, whereas the indicator commitment to domain is more concerned with the content of the collaboration. In contrast, in relation to the dimension of shared interactional repertoire, when the group started to regulate the interaction, role-taking was more distributed and dynamic effort was more equally divided. This can be explained in three ways: the indicators are related to each other; the design principle of rotating the chairperson influenced the three indicators separately; or rotating the chairperson influenced the three indicators through the mediating factor of an increase in

responsibility for the collaboration process. Future research, therefore, should focus on the relationships within and between the dimensions for which the independence of the different indicators is studied.

### Design principles

The relatively high number of implemented design principles can be attributed to the flexibility of educator and the model on which the design principles are based. As the teacher educator was an employee of both the teacher education institute and the school, it was rather easy to respond to the needs and goals of the different stakeholders. The same flexibility is provided by the Learning Together model of Johnson and Johnson (1999). Because the model does not prescribe fixed activities, the teacher educator was able to adjust to the needs of daily practice without endangering the implementation of the design principles. Some design principles were not implemented or partially implemented. Next we discuss possible explanations.

Design principle 3 about discussion of the definition of important concepts was not implemented. This does not necessarily mean that this design principle is not feasible at all; an alternative explanation could be that, in this context, the teacher educator did not feel the necessity of implementing this design principle. The concepts in this case are used so frequently in the teaching profession that the definition of the concepts were clear to all participants. Another explanation could be that, because this group was part of a SUP and the formal leader was a teacher educator, the group accepted the definitions used by the teacher education program.

The other design principles were only partially implemented. For example, for design principle 13 (“Task interdependence is stimulated by providing the group with authentic tasks in which both the knowledge of student teachers and teachers is needed to accomplish the task.”) the group received an authentic and meaningful task during eight meetings. However, the student teachers and teachers were only partnered three times at the beginning of the project because of the composition of the group.

Design principles 8, 9 and 10, focusing on interpersonal and group skills and formulating norms and values, were also partly implemented. The educator stimulated the use of both basic and group skills by modelling in most meetings. However, the teacher educator was convinced that the strongest effect would be accomplished when the use of these skills were explicated when a conflict occurred. However, because a conflict did not occur in any meeting, so the teacher educator did not have any material for explaining the process of collaboration and the skills needed to contribute to this collaboration. As long as the collaboration process went well, the teacher educator did not see the necessity of intervening. Because Johnson and Johnson see the interpersonal and group skills as a condition for collaborative learning, it could be questioned whether the student teachers and teachers already had the necessary interpersonal and group skills to participate in a community. In previous research, when the authors studied three postgraduate teacher education programs in the Netherlands, in which it was found that student teachers were not explicitly taught competencies to participate in a community. However, it is possible that the student teachers already elaborated their interpersonal competencies during their undergraduate education. Alternatively, the possibility arises that other design principles contributed to their skills through learning by doing. For example, when implementing design principle 14, “goal interdependence is stimulated by negotiating shared goals and defining a common goal”, one can assume that, by negotiating shared goals, community members elaborate on the skills of listening, summarising, discussion and negotiation. In summary,

it remains indecisive as to what extent the participants in this study already possessed the necessary interpersonal skills or learned them implicitly during the project. Future research on teacher education should not only focus on the presence of the necessary community competencies of student teachers, but also more clarification is needed on the relationship between interpersonal and group skills as defined by Johnson and Johnson and the community skills needed to participate in a community.

In conclusion, this study focused on the development as a community of a group that was a stereotype example of a school–university partnership or professional development school as described in the literature. Although we studied this group in depth for over a full school year, a major limitation of this research is that we only studied one single group. Future research is needed to improve the generalisability of our results to other SUPs which are less voluntary or function with an educational perspective. Additionally, we used in this research the model of Johnson and Johnson as a source of inspiration to develop the design principles. It provided us with guidelines to stimulate collaborative learning within a community. However, caution is needed in attempting to understand the relationship between collaborative learning and community development. Furthermore, we did not study the effect of the community level on teacher or student teacher improvement in teaching and learning. A high community level does not necessarily mean that high performance on learning or teaching is reached. We suggest a future research focus on patterns of community level across indicators and dimensions, dependent on the task, goals, context and leadership of the SUP for improving learning outcomes of the community.

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