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Design principles to support student learning in teacher learning groups

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ABSTRACT

This study presents design principles for student facilitation in teacher learning groups (TLGs), based on a systematic literature review searching for characteristics, conditions, and outcomes of students working in TLGs. Notions of team learning, network learning, community learning, and collective learning within teacher education were taken as the main components of the search. The review turned out to be very lean in terms of input; only 17 articles did justice to this theme. The exercise resulted in five main characteristics of TLGs (i.e. shared vision and goals; a project-based approach; shared responsibility and ownership; diversity and equality; supportive structures, resources and roles) and associated conditional factors. We combined these characteristics and conditional factors to formulate design principles, which can serve as a starting point for the supervision of students in TLGs. The limited number of search results shows that more research into student learning in TLGs is needed. Furthermore, the design principles yielded by the review are formulated in very general terms. In follow-up research, we will monitor four institutes for primary teacher education that enable student learning in TLGs with various social configurations. This study is expected to further concretise the design principles for student learning in TLGs.

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Design principles; social learning; student learning; teacher education; teacher learning groups

1. Introduction

Over the past decades, the value of social learning in the educational field has gained acknowledgement (Littlejohn et al., 2019). Practice, research, and policy increasingly focus on the added value of social learning for professionalisation and developing school practice (Vermeulen, 2016). In 2006, Stoll et al. already suggested that school communities need to cooperate to take charge of change, finding the best ways to enhance young people's learning. In order to be successful in a constantly changing knowledge society, learning can no longer be an entirely individual matter—new approaches to learning are necessary. Furthermore, research shows that social learning is more effective than individual learning for sustainable teacher development (Cordingley et al., 2005) and

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that social relationships are important resources of school improvement and innovation on the educational system level (Moolenaar & Slegers, 2010). Learning processes on the system level are also known as organisational learning, collaborative or collective learning, community learning, team learning, or networked learning. Accordingly, different social learning constellations have evolved, such as networks, teams, and professional learning communities (Vrieling-Teunter et al., 2016).

Although each of these social learning constellations has its own angle, teacher cooperation in general can be observed as teachers working and discussing practice issues while sharing a similar focus on learning (Littlejohn et al., 2019). To account for the natural dynamics in such groups, Vrieling-Teunter et al. (2016) have coined the overarching term of teacher learning groups (TLGs). After all, in practice, TLGs develop mixed forms of social learning, emphasising different aspects at different times (Wenger et al., 2011). For instance, a group of professionals considering itself a team (working cohesively towards a common goal) might at times also integrate aspects of a community (creating an identity around a common learning agenda) and a network (focusing on the diversity of social relationships) (Vrieling-Teunter et al., 2016). In TLGs, teachers undertake learning activities in collaboration with colleagues, resulting in a change in cognition and/or behaviour at the individual and/or group level (Doppenberg et al., 2012). This definition relates to social learning as sharing problems and insights in a constructive way, connecting with familiar concepts and using new knowledge that is collaboratively constructed through dialogues and social interactions (Wenger et al., 2011).

Providing opportunities for pre-service teachers (hereinafter: students) to experience social practices themselves and to understand the challenges as an integral part of teacher education curricula, stimulates students' professional development (e.g., Sewel et al., 2018). As stipulated by Vrieling-Teunter et al. (2019), TLGs firstly form a context in which students closely collaborate (face-to-face or blended) with various stakeholders from the educational and work field. These constellations can include fellow students, teacher educators, in-service teachers, researchers and experts, leading to more opportunities for students to (informally) exchange knowledge and practical advice with others. TLGs secondly allow for students to structurally work with peers and experts on a shared topic, with shared goals. Thirdly, students' participation in TLGs stands to have a positive impact on the development of their social competence and their sense of belonging to a community. Finally, participating in TLGs provides opportunities for students to experience shared practice of and beliefs on how teachers in a group interact.

Working in TLGs has proven to be beneficial in various ways for different players in the educational field. For example, social learning as part of in-service teacher education was related to innovativeness and innovation processes such as the change of teaching practices within schools (Luyten & Bazo, 2019; Vanblaere & Devos, 2016). Students also reap the rewards of TLG participation: TLGs facilitate their learning (Eteläpelto et al., 2005) and offer feedback opportunities for direct improvement of their work (Vrieling-Teunter et al., 2019). In order to be prepared for their future profession, in which social learning is a key context for professional development, students should develop the skills and competencies they need to function in these constellations of working and learning together (Dobber et al., 2012). Integrating social learning in the teacher education curriculum could therefore be considered essential. However, even though social learning in general and participation in TLGs in particular have been grateful objects of study,

there is no scholarly consensus on the abovementioned competencies—within or outside of the domain of education (Dobber et al., 2012). Provan and Kenis (2008), in their conceptual study of network governance, indicate that competencies needed to function in a network differ according to a network's social configuration, its goals, and its external tasks. For lack of a more specific characterisation, network competencies could be pinpointed as a combination of community competencies—i.e. being able to experience as well as create a sense of community (Admiraal & Lockhorst, 2012)—, value creation competencies—i.e. being able to recognise and create value within networks (Wenger et al., 2011)—, and (self) regulation competencies—i.e. being able to give shape to one's own behaviour as well as the behaviour of other network participants in order to achieve certain process- or product-related goals (Dobber et al., 2012).

2. Problem definition

Despite the importance of students' participation in TLGs, the preparation of students for their social role as learning professionals in schools is weakly conceptualised in teacher education curricula (Dobber, 2011). It is therefore relevant to consider ways in which students can best be prepared for successful participation in TLGs as part of the continued professional development in practice. A prerequisite for students' successful TLG participation is facilitation; enabling TLGs in terms of time, space, and skills is fundamental for social learning and innovation (Hanraets et al., 2011). However, little research has been done into the conditions TLGs should meet to achieve the intended outcomes for students' professional development within teacher education curricula. Although facilitating social learning in the context of teachers has been a grateful object of scholarly attention, the diversity in composition of TLGs, as well as the importance of professional development for all stakeholders, requires adapted guidelines for student facilitation in TLGs. In order to comply with this need, we looked for guidelines that assist facilitators in optimising the professional development of students in TLGs. For this aim, we performed a review study that was guided by the following research question: What facilitation guidelines can be discerned in literature to optimise students' professional development in TLGs? In order to achieve this goal, we sought for characteristics, conditions, and outcomes of student learning in TLGs, resulting in the following sub-questions:

- (1) How are students' learning processes in TLGs' characterized?
- (2) Which conditions are eminent in enhancing students' professional development in TLGs?
- (3) To what extent does students' participation in TLGs enhance their professional development?

3. Literature review

The studies presented in the literature review were identified in several steps. The review started with a search in EBSCOhost. This meta-database includes, among others, the ERIC and Web of Science databases. Peer-reviewed journal articles and book chapters published between 1 January 2000 and 7 June 2019 were included. In line with an earlier

review study in the area of teacher facilitation in TLGs (Vrieling-Teunter et al., 2016), we used the keywords ‘team learning’, ‘network learning’, and ‘community learning’ to integrate the three basic forms of social learning. In addition, we used the keyword ‘collective learning’, because collective learning also implies a long-term perspective and is appropriate within teacher education curricula. In sum, the following keywords were used for a Boolean search: ‘team learning’ OR ‘network learning’ OR ‘community learning’ OR ‘collective learning’ AND ‘teacher education’ AND ‘student learning’. This search resulted in 269 articles. After exclusion of the double findings, 190 articles remained.

The abstracts of all selected sources were studied first, resulting in a final selection of articles. The first 20 articles were studied by four researchers as a member check. After consensus was achieved, the remaining articles were divided by the four researchers. After reading the abstracts, 175 articles were left out of the analysis because they did not meet the inclusion criteria: (1) student involvement; (2) social learning; (3) work field involvement; (4) face-to-face and blended learning. Exclusion criteria were: (1) student collaboration; (2) student-teacher collaboration; (3) team teaching; (4) online/e-learning. In total, 15 articles were selected. In addition, the reference lists of the found articles were consulted (‘snowballing’; Petticrew & Roberts, 2006), resulting in two more articles. In total, 17 studies (see [Appendix A](#)) were read in depth and provided the basis for the further analysis.

In the final phase, the selected sources were categorised by: (1) first authors’ names ([Appendix A](#), column 1); (2) type of research (conceptual/empirical/review; [Appendix A](#), column 2); (3) indication in the Social Sciences Citation Index (yes/no/emerging; [Appendix A](#), column 3); (4) main topic ([Appendix A](#), column 4); (5) relationship to subquestion 1 (characteristics, [Appendix A](#), column 5); (6) relationship to subquestion 2 (conditions, [Appendix A](#), column 6); (7) relationship to subquestion 3 (outcomes, [Appendix A](#), column 7).

4. Findings from the literature

Grounded on the literature review, we saw that only 9 out of 17 publications were indexed as SSCI (n = 7) and emergent SSCI (n = 2). Given the small number of potentially useful studies, we nonetheless decided to include all studies in the description of the findings. Eight of the reviewed articles focused on community service learning (CSL, [Appendix A](#), column 4) that is forthcoming from national programmes in Australia and the US. The goal of the programmes concerns social justice in deprived areas by playing a part in the capacity building of the community from the university. The CSL articles viewed communities as neighbourhoods where students can learn from experiences as a form of workplace learning. These articles did not match our research question and did not provide any input for the description of the findings. On the basis of [Appendix A](#), we describe below the findings concerning characteristics, conditions and outcomes of TLGs.

4.1 Characteristics of TLGs

Nine of the articles found in this literature review focus on the nature of school-university partnerships (Appendix A, column 5, subquestion 1). Each of these articles addresses the need felt by institutes for teacher education to reassess the ways in which they collaborate with their partners in the work field. At first sight, students, in-service teachers, and teacher educators have a lot in common: they all teach and, ideally, they are all interested in developing their respective professional practices. It is no wonder, then, that school-university collaborations are easily forged (Harris & Van Tassel, 2005). According to Harris and Van Tassel (2005), these collaborations can be divided into three categories, based on the activities that characterise them: (1) supervising and mentoring students; (2) providing customised professional development for in-service teachers; (3) conducting research or inquiry, either led by university faculty or in collaboration between school-based and university-based educators. Professional experience—predominantly seated on the first type—is the most obvious reason for schools and universities to join forces. However, in a context where partners are equal, similar even, but not the same, collaboration even on this basis can be challenging. Indeed, Bloomfield (2009) explains how school-university collaboration is often accompanied by a certain amount of friction: teacher educators and in-service teachers do not always agree on what makes ‘good teaching’ or, indeed, a ‘good teacher’. Moreover, regulation and acknowledgement of the importance of workplace experience at the professional development school (PDS) are by no means common in teacher education (Sewel et al., 2018).

It stands to reason that school-university partnerships can become more fruitful by not making them revolve solely around the education and preparation of students, but by also making them rewarding for in-service teachers. After all, the concept of ‘partnership’ suggests a mutually beneficial form of collaboration, based on shared responsibility and shared ownership (Sewel et al., 2018). This could be envisaged as a combination of all three types proposed by Harris and Van Tassel (2005). Marcum-Dietrich and Mahoney (2015) add to this the ultimate aim of each form of collaboration or partnership between schools and universities as part of teacher education, which is to achieve a positive impact on the target group of pupils or young learners. This is where the concept of ‘learning communities’ comes into play. According to Bloomfield (2009), in learning communities, all parties—students, in-service teachers, and teacher educators alike—are learners, and they are all responsible for the quality of the activities engaged in as well as the goals set by the community as a whole. As pointed out by Norman et al. (2005, p. 274), learning communities are, in that sense, the ‘serious learning opportunities’ for in-service teachers to actually become lifelong learners. Elster et al. (2014) also use the term Community of Learners (CoLs) and base their work on theories of situated learning which describe the collaboration of teachers with each other and with researchers. This conception of learning communities is in line with Harris and Van Tassel’s (2005) PDS—defined as a learning organisation where university-based teacher education programmes collaborate with its K-12 school partners—which places inquiry-based practice and joint development at the heart of a learning community. CoLs are expected to improve learning and teaching skills, to share responsibility for professional growth, and to partake in professionally guided discourse about one’s own teaching and learning. Tinkler et al. (2014)

broaden the definition of communities and include not only the K-12 schools with which they work, but also the community that encompasses the K-12 school system. According to Tinkler et al. (2014) this approach is crucial in establishing long-term, mutually beneficial relationships.

The use of terminology in the field of school-university collaboration is varied. The terms ‘learning communities’ or ‘communities of learning’ and ‘partnerships’ are used by Harris and Van Tassel (2005), Marcum-Dietrich and Mahoney (2015), Sewel et al. (2018), and Bloomfield (2009). Vrieling-Teunter et al. (2016, 2019) use the more specific terms ‘teacher networks’ and ‘teacher learning groups’, which are identical in their foundations and goals. We adopted the latter term in this study (see Introduction section for a definition and characteristics of TLGs). Norman et al. (2005) use the term ‘critical friends group’, which is a ‘professional learning community . . . engaging in collaborative practices’ (p. 275). Unlike some other forms of collaboration, critical friends groups always have one participant acting as a coach or facilitator, and usually follow a particular protocol. A useful theoretical framework or model for learning in learning communities is Engeström’s Activity Theory and his notion of Expansive Learning (Engeström, 1987; Engeström & Sannino, 2010; cf. Bloomfield, 2009). Engeström’s model of an activity system explains how a community uses instruments, rules, and a division of labour in undertaking activities in a certain (problematic) situation (which is labelled the object in the model), sometimes taking a single perspective (which is signified as the subject). One of the pivotal elements is boundary crossing. As suggested by Engeström and Sannino (2010), learning communities are an excellent breeding ground for educational innovation by means of boundary crossing, in which a student ‘may act as a crucial boundary-crossing change agent, carrying, translating and helping to implement new ideas between the educational institution and the workplace’ (p. 13).

If we look in more detail, Harris and Van Tassel (2005) describe essential characteristics of school-university partnerships—in their work indicated with the term PDS—in the form of standards with descriptive commentary and with rubrics that denote a partnership as meeting the standards at a ‘beginning’, ‘developing’, ‘standard’ or ‘leading’ level. It is possible for a partnership to meet the five standards at different developmental levels and/or to return to an earlier level on one standard or another as it deals with growth and change. The five standards consist of (1) learning community: a common vision of teaching and learning, grounded in research and practice, guides the work of the partnership and results in improvements in the practice of individuals and of the partnering institutions; (2) accountability and quality assurance: the partners set clear criteria for institutional and individual participation, establish outcome goals for participants, develop assessments and use results to examine their practice systematically; (3) collaboration: Each partner contributes to the joint work; (4) diversity and equity: partners and candidates develop and demonstrate knowledge, skills and dispositions resulting in learning for all P-12 students; (5) structures, resources and roles: the partners ensure that structures, programmes and resource decisions support their mission, reacting and modifying roles as necessary to achieve their goals. All five standards require diligent and structural evaluation of the partnership, not only of its activities and results, but also of its ‘modus operandi’ (Marcum-Dietrich & Mahoney, 2015).

4.2 Conditions for student learning in TLGs

The results show that the facilitation of student learning in TLGs has not been a prolific topic of scholarly publication over the last twenty years. Only three publications from the review study are predominantly focused on describing conditions for student learning in TLGs (Appendix A, column 6, subquestion 2). To facilitate student learning in CoLs, Elster et al. (2014) describe six conditions: (1) set joint goals for the participants in TLGs; (2) focus on students' learning (outcome orientation); (3) reflect on curriculum, teaching, and learning processes; (4) focus on collaboration; (5) enable teachers to perceive themselves as learners; (6) ensure autonomy and freedom of decision-making. Based on a small-scale qualitative study, Sewel et al. (2018) distinguish between seven affordances of learning communities: (1) build relational trust; (2) make shared values visible; (3) be willing to share power and expertise; (4) respond to school context; (5) promote dialogue; (6) set manageable goals and resource these goals; (7) communicate effectively. When it comes to facilitating students in their participation in TLGs, Vrieling-Teunter et al. (2019) describe five guidelines: (1) present student assignments during group meetings for (peer)feedback; (2) complete a working plan before the start of the group meeting; (3) raise awareness of the importance of social learning for development of social competencies; (4) model metacognitive skills; (5) provide transparency and make use of criteria when students are supervised and assessed by the same person.

4.3 Outcomes of TLG participation on student learning

The review study shows that three articles describe possible outcomes of social learning for students (Appendix A, column 7, subquestion 3). Facilitating the role of students in TLGs is by no means a wasted effort: students who participated in CoLs (Elster et al., 2014) showed an increase of subject knowledge in the field (i.e. inquiry-based science education); methodological knowledge; practical knowledge on how to initiate and conduct processes in the field, which in turn led to a readiness to use the acquired knowledge in practice; self-estimation of students' own competencies that led to the willingness to teach in this way; and interest in self-reflection. Following Harris and Van Tassel (2005), students in PDS partnerships, when compared with those placed in scattered settings, utilised more varied teaching strategies, were more reflective, had more knowledge of school routines and practices, were more confident of their knowledge base, felt better prepared to teach linguistically and ethnically diverse learners and had lower attrition rates after the first years of teaching. Norman et al. (2005) add that collaboration between students, in-service teachers, and teacher educators in learning communities could have a positive effect on teacher turnover, especially for novice teachers.

5. Conclusions

The studies were related to three overarching main themes: (1) school-university partnerships that matched our first subquestion (i.e. characteristics); (2) conditions for student learning that matched our second subquestion (i.e. conditions); and (3) community engagement that did not meet our research question. Out of the studies that

focused upon characteristics and conditions, some outcomes of student learning in TLGs (third subquestion) could be derived. Hereafter we will elaborate on the conclusions concerning subquestions 1, 2, and 3, respectively.

In addition to the definitions given by Doppenberg et al. (2012) and Wenger et al. (2011) as described in the introduction section, the five standards proposed by Harris and Van Tassel (2005) are an appropriate starting point for a characterisation of TLGs. According to Harris and Van Tassel (2005), TLG activities should focus on supervision of students as well as professional development of in-service teachers by means of joint research activities. More specifically, a TLG should consist of partners who achieve a common vision of teaching and learning, and who are willing to explicitly set shared goals and establish a mutually beneficial way of working (i.e. characteristic 1: shared vision and shared goals). These goals and this way of working should be the object of structural evaluation through the use of assessment criteria. This implies a project-like approach (i.e. characteristic 2: project-based approach). Each partner in a TLG can, in a sense, be called a learner, and should experience responsibility and ownership of a TLG's goals and activities, as well as any tangible products that are developed (i.e. characteristic 3: shared responsibility and ownership). Because cooperation in TLGs should lead to learning from all participants, it is important that there is diversity and equality (i.e. characteristic 4: diversity and equality). Finally, underlying structures, available resources and participant's roles should support the goals of TLGs to be achieved (i.e. characteristic 5: structures, resources and roles).

To comply with these characteristics, TLGs must meet certain conditions. In order to achieve shared vision and goals (characteristic 1), it is important for TLGs to set joint goals (including student goals) that respond to school contexts, and make shared values visible. For a project-based approach (characteristic 2), social learning must be integrated in teacher education curricula, and TLGs should set manageable goals and resource these, including students' learning (products). For students in particular, it is important to complete a working plan before the start of the group meetings. To stimulate shared responsibility and ownership (characteristic 3), all participants should be willing to share power and expertise. This includes providing opportunities for students to present their assignments during group meetings for (peer)feedback. In this matter, it is especially important for students that they are aware of the importance of social learning for development of social competencies as an integral part of their portfolio that is not only focused on designing a high-quality product, but also on learning how to work together in TLGs. To enhance diversity and equality (characteristic 4), TLGs should enable all participants to see themselves as learners and build relational trust. This is because if there is no trust and respect, the diversity might be violated. If students are supervised and assessed by the same person, it is also important to use an objective method. To ensure supportive structures, resources and roles (characteristic 5), TLGs must create a working environment that stimulates dialogue, autonomy and freedom of decision-making including attention for the development of collaboration and communication skills. These skills must be modelled. In these circumstances, students can receive the role of boundary crosser between theory and practice that is crucial for innovation.

When we look at the findings concerning the outcomes of TLG participation on students' learning, positive effects became visible on their subject knowledge,

methodological knowledge and practical knowledge. These effects also resulted in a readiness to apply the acquired knowledge in practice. Furthermore, the findings showed a positive influence of TLG participation on students' confidence, in a way that they felt better prepared for teaching. Working in TLGs also increased students' reflection skills and reduced starting teachers' attrition.

Based on the characteristics and associated conditions, we arrive at the following design principles when guiding students in TLGs:

- (1) To achieve shared vision and goals: *set joint goals (including student goals) that respond to school contexts; *make shared values visible.
- (2) To set up a project-based approach: *integrate social learning in teacher education curricula; *set manageable goals and resource these goals including students' learning (products); *make sure that students complete a working plan before the start of the group meetings.
- (3) To stimulate shared responsibility and ownership: *stimulate participants to share power and expertise; *provide opportunities for students to present their assignments for (peer)feedback; *make students aware of the importance of social learning for development of social competencies as an integral part of their portfolio.
- (4) To enhance diversity and equality: *enable all participants to see themselves as learners; *build relational trust; *use an objective method to supervise and assess students.
- (5) To ensure supportive structures, resources and roles: *create a working environment that stimulates dialogue, autonomy and freedom in making decisions; *model skills for collaboration and communication; *give students the role of boundary crosser between theory and practice.

6. Discussion

Research into facilitation of student participation in TLGs is still in its infancy. We use the concept of TLGs because their composition is special since the participants come from the education and the work field, leading to a great diversity, also including novices and experts. The present literature review yielded only 17 results, nine of which were pertinent to the research questions. However, the interplay between characteristics of TLGs, conditions for students' TLG participation, and the outcomes of this participation is by no means undeserving of scholarly attention: being competent in social learning and collaboration in heterogeneous groups could be considered a prerequisite for being a successful educational professional in a knowledge society (Moolenaar et al., 2014). It can therefore be argued that this new line of research needs further investigation. The distinction between characteristics and conditions has proven difficult as we could sometimes speak of conditional characteristics. This can, for example, be seen in the standards of social learning distinguished by Harris and Van Tassel (2005) and must be taken into account in future research.

The design principles, as derived from the literature review, provide a first attempt for the guidance of students in TLGs. To some extent, however, there seems to be a certain amount of friction between the principles found. For example, principle one describes

the importance of a shared vision and shared goals for participants in TLGs, while principle four shows that diversity in TLGs is important to be able to learn from each other's points of view. Earlier research in learning communities (Vermeulen, 2016) shows that more heterogeneity in the composition of the group leads to more innovative perspectives and that more strong learning relationships and common perspectives lead to more learning from improved routines. However, how these characteristics of learning communities are applicable in TLGs and more specifically what this means for the guidance of students in TLGs is important input for follow-up research. Tension also becomes visible with regard to principle four that stresses the equality of the participants but also includes students' assessment. It seems to be a unidirectional process since only students are assessed. This can lead to inequality between participants and as such can hinder learning, especially on the part of students.

the design principles that form the conclusion of this literature review are a first handhold for the guidance of students that was lacking until now. However, the design principles are of a relatively general nature. The student focus is integrated into the principles, but most of them are not specifically drawn up from the student's perspective. If we want students to grow into the role of boundary crosser between theory and practice, more research is needed to pinpoint all the important characteristics and conditions for student learning in TLGs: What exactly are social learning competencies? How is equality guaranteed in a situation of collaboration between teacher educators and students, when there is also dependency? How are specific social learning competencies modelled by in-service teachers as well as teacher educators? What are important ingredients of a working plan of students participating in TLGs? What is considered an objective method to supervise and assess students? Does this mean transparency and the use of criteria? A subsequent study will compare student participation in TLGs in four contexts—four institutions for teacher education in the Netherlands. This comparison will be a follow-up step towards concretisation of the design principles presented in this literature review.

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Appendix A. Studies included in the analysis

First author (year)	Type of research	SSCI	Main topic	Relation to subquestion 1 Characteristics	Relation to subquestion 2 Conditions	Relation to subquestion 3 Outcomes
Bloomfield (2009)	Conceptual	yes	Partnerships between students and universities.	In learning communities all parties—students, in-service teachers, and teacher educators alike—are learners, equal (but not the same), and responsible for the quality of the activities engaged in as well as the goals set by the community. There is often a certain amount of friction, due to the question what is good teaching or a good teacher.		
Butcher et al. (2003)	Empirical	yes	Community service learning: purposeful workplace learning where the workplace is not the classroom, but a community service agency or a community action project.			
Colby et al. (2009)	Empirical	no	Community service learning: to provide authentic learning experiences for students and to enhance community life.			
Elster et al. (2014)	Empirical	no	Communities of learning (Col.): the collaboration of (student) teachers with each other and with researchers.	CoLs are based on theories of situated learning. They are expected to improve learning and teaching skills, to share responsibility for professional growth, and to partake in professionally guided discourse about one's own teaching and learning.	Six conditions: (1) set joint goals; (2) focus on students' learning (outcome orientation); (3) reflect on curriculum, teaching, and learning processes; (4) focus on collaboration; (5) enable teachers to perceive themselves as learners; (6) ensure autonomy and freedom of decision-making.	Increase of: (1) subject knowledge in the field (i.e. inquiry-based science education); (2) methodological knowledge; (3) practical knowledge on how to initiate and conduct processes leading to readiness to use this knowledge; (4) self-estimation of own competencies, leading to willingness to teach this way; (5) interest in self-reflection.

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First author (year)	Type of research	SSCI	Main topic	Relation to subquestion 1 Characteristics	Relation to subquestion 2 Conditions	Relation to subquestion 3 Outcomes
Engeström and Sannino (2010)	Review	yes	Expansive learning: learning in which the learners are involved in constructing and implementing a radically new, wider and more complex object and concept for their activity.	Engeström's model of an activity system explains how a community uses instruments, rules, and a division of labour in undertaking activities in a certain (problematic) situation (object), sometimes taking a single perspective (which is signified as the subject). Students may act as boundary crossers helping to implement new ideas.		
Green (2016)	Empirical	emerging	Community service learning: community-based education and teaching in outdoor settings (lessons outside the school).			
Hardy and Grootenboer (2016)	Empirical	emerging	Community service learning: cultivating community partnerships: detailing school and community engagement.			

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First author (year)	Type of research	SSCI	Main topic	Relation to subquestion 1 Characteristics	Relation to subquestion 2 Conditions	Relation to subquestion 3 Outcomes
Harris and Van Tassel (2005)	Conceptual	yes	Professional development school (PDS): a learning organisation formed through the collaboration of a university-based teacher education programme with its K-12 school partners.	<p>The focus of a PDS is on inquiry-based practice and joint development. Three main processes are distinguished: (1) supervising and mentoring students; (2) providing customised professional development for in-service teachers; (3) conducting research or inquiry. Essential characteristics of a PDS are described in the form of standards with descriptive commentary and rubrics that denote a partnership on four levels: beginning, developing, standard or leading. A partnership can meet the five standards at different developmental levels and/or can return to an earlier level. The five standards consist of (1) <i>learning community</i>: the partners demonstrate a common vision of teaching and learning, grounded in research and practice that guides the work of the partnership and results in improvements in the practice of individuals and the partnering institutions; (2) <i>accountability and quality assurance</i>: the partners set clear criteria for institutional and individual participation, establish outcome goals for participants, develop assessments and use results to examine their practice systematically; (3) <i>collaboration</i>: each partner contributes to the joint work; (4) <i>diversity and equity</i>: the partners develop and demonstrate knowledge, skills and dispositions, resulting in learning for all P-12 students; (5) <i>structures, resources and roles</i>: the partners ensure that structures, programmes and resource decisions support their mission, reacting and modifying roles as necessary to achieve their goals.</p>	<p>Participants of PDSs: (1) utilised more varied teaching strategies; (2) were more reflective; (3) received more knowledge of school routines and practices; (4) demonstrated more confidence of their knowledge base; (5) felt better prepared to teach linguistically and ethnically diverse learners; e) showed lower attrition rates after the first years of teaching.</p>	

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First author (year)	Type of research	SSCI	Main topic	Relation to subquestion 1 Characteristics	Relation to subquestion 2 Conditions	Relation to subquestion 3 Outcomes
Marcum-Dietrich and Mahoney (2015)	Conceptual	no	Transformation of a traditional teacher preparation programme into a dynamic learning community in secondary education.	Besides mutually beneficial collaboration, based on shared responsibility and shared ownership, collaboration has to achieve a positive impact on the target group of pupils or young learners. Furthermore, diligent and structural evaluation of the partnership, its activities and results, and of its "modus operandi" is advised.		
McDonald et al. (2013)	Empirical	yes	Community service learning: preparing teachers to learn and act upon teaching from a social justice perspective.			
Moore et al. (2000)	Conceptual	no	Community service learning: importance of strong personal relationships between middle school, university and neighbourhood to ensure all partners are heard and valued.			
Norman et al. (2005)	Conceptual	no	Guidelines for conversation within a "critical friends group" and the importance of clear delineation what role each group member plays (e.g., facilitator, presenter and participants) within professional development schools.	Learning communities (collaboration between students, in-service teachers, and teacher educators in learning communities) are "serious learning opportunities" for in-service teachers to actually become lifelong learners. Norman et al. (2005) use the term "critical friends group", which is a "professional learning community . . . engaging in collaborative practices" (p. 275). Unlike some other forms of collaboration, critical friends groups always have one participant acting as a coach or facilitator, and usually follow a particular protocol.	Learning communities could have a positive effect on teacher turnover, especially for novice teachers.	
Russel-Bowie (2009)	Empirical	no	Community service learning: to provide authentic learning experiences for students and to enhance community life.			
Ryan et al. (2014)	Conceptual	no	Community service learning: teacher education partnerships with schools and communities to prepare teachers for diverse classrooms in a developmental trajectory of field-based experiences.			

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First author (year)	Type of research	SSCI	Main topic	Relation to subquestion 1 Characteristics	Relation to subquestion 2 Conditions	Relation to subquestion 3 Outcomes
Sewel et al. (2018)	Empirical	yes	University-school partnerships to develop and document strategies that effectively facilitate the co-construction of the key components of one initial teacher education course.	A "partnership" is a mutually beneficial form of collaboration or learning community, based on shared responsibility and shared ownership. It focuses on regulation and acknowledgement of the importance of workplace for student learning.	Seven affordances: (1) build relational trust; (2) make shared values visible; (3) be willing to share power and expertise; (4) respond to school context; (5) promote dialogue; (6) set manageable goals and resource these goals; (7) communicate effectively.	
Tinkler et al. (2014)	Empirical	no	An educational approach that combines learning objectives with community service in order to provide a pragmatic, progressive learning experience while meeting societal needs.	The definition of communities includes the K-12 schools and the community that encompasses the K-12 school system, for establishing long-term, mutually beneficial relationships.		
Vrieling-Teunter et al. (2019)	Empirical	Yes	Guided by the "Dimensions of Social Learning Framework", patterns of social behaviour in a teacher learning group (TLG) within teacher education are presented, resulting in observation criteria. In addition, student facilitation guidelines are presented.	In TLGs, the participants (students, teacher educators, in-service teachers, researchers, experts) collaboratively undertake learning activities (face-to-face or blended), resulting in a change in cognition and/or behaviour at the individual and/or group level. TLGs lead to opportunities for participants to (1) (informally) exchange knowledge and practical advice with others (i.e. experts); (2) structurally work with peers and experts on a shared topic, with shared goals (i.e. domain and value creation); (3) develop their social competence and their sense of belonging to a community (i.e. group identity); (4) experience shared practice of and beliefs on how teachers in a group interact (i.e. organisation).	Five guidelines: (1) present student assignments during group meetings for (peer)/feedback; (2) complete a working plan before the start of the group meetings; (3) raise awareness of the importance of social learning for development of social competencies; (4) model metacognitive skills; (5) provide a method of enhancing objectivity when students are supervised and assessed by the same person.	