

Team-based Professional Development in Higher Education

A Review Study

I Gast¹

PhD candidate
University of Twente
Enschede, The Netherlands
E-mail: i.gast@utwente.nl

JT van der Veen

Chairman of 3TU Centre for Engineering Education
University of Twente
Enschede, The Netherlands
E-mail: j.t.vanderveen@utwente.nl

K Schildkamp

Assistant professor
University of Twente
Enschede, The Netherlands
E-mail: k.schildkamp@utwente.nl

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INTRODUCTION

More and more higher education institutes are reforming their education with the goal to better prepare students for their future in our changing society. For example the University of Twente is currently redesigning its engineering education by introducing project-based education. For the successful implementation of these curriculum

¹ Corresponding Author
I Gast
i.gast@utwente.nl

innovations, teacher professional development is needed. During the last decennia more and more attention has been given to teacher professional development in higher education. However, although research has already shown that teacher professionalization in teams is more successful than individual teacher professional development, most studies published on teacher professional development in higher education focus on individual professional development interventions [1]. Team-based professional development interventions have been mostly neglected so far. To provide an overview of what is known until now about the benefits of team-based professional development in higher education, we conducted a systematic review study. The research question guiding our search was: What are the benefits of team-based professional development in higher education in terms of teacher attitudes and teacher learning, and under which conditions are they most successful?

1 METHOD

1.1 Literature search procedure

The method for this study is based on Petticrew and Roberts' [2] method for executing systematic reviews in the social sciences. A systematic review study was conducted using four scientific databases: ERIC, PsycInfo, Scopus and Web of Science. The following search terms were used until now: "professionalization AND teacher AND higher education" and "professional development AND teacher AND higher education". This resulted in 533 publications. Furthermore, based on our inclusion and exclusion criteria, we found and analysed 10 articles for this review until now. Additionally, we are going to extend our search terms and use the snowballing technique to search the references of these articles.

1.2 Inclusion and exclusion criteria

We only included studies in our review that were conducted in the context of higher education and had a team component. Furthermore, the articles had to be published in English in peer reviewed journals. They had to provide information about teacher learning or teacher attitudes as a result of a professional development intervention, or had to study conditions for successful team-based professional development interventions. Articles that were excluded from this review studied teacher professional development in another educational context, such as primary education or secondary education. Furthermore, all articles that focussed on professional development of teachers in a non-team-based context and articles that were published in non-peer review journals were excluded from this review.

1.3 Quality check

Based on Petticrew and Roberts [2] the quality of the articles were checked using eleven quality criteria such as: (1) Is the research in combination with the chosen method capable of finding a clear answer to the research question?, or (2) Does the study contain enough data to assure the validity of the conclusions?. Each criterion was evaluated on a three point scale of either 0, 0.5 or 1 point. Only articles with a combined score of at least 7 were included in the review.

2 RESULTS

In this section the studies included in this review are briefly presented and their findings in relation to our research question are described. The following section is divided according to the three parts of our research question: teacher attitudes, teacher learning and the conditions for success of team-based professional development interventions.

2.1 Attitudes

Out of the articles included in our review, only four articles report on the effect of team-based interventions on the attitudes of teachers. Bakah et al. [3] found that teachers who participated in the teacher design teams rate these teams very high. They specifically valued teacher design teams as an opportunity for professional development. The teachers also appreciated the collaboration within the design team and the opportunity to design the curriculum within the team. Leppisaari et al. [4] studied teacher professionalization within an international teacher learning community. In their study they found that teachers had a positive attitude towards the international collaboration within the virtual learning community and saw the virtual learning community as a “meaningful peer learning and development space” (p. 184). Rienties et al. [5] studied teachers’ attitudes towards working in a group as part of an online training that aimed to improve teachers’ Technological Pedagogical Content Knowledge (TPACK). Although they found that the teachers were moderately to positively satisfied with the overall training and its group components, only 34% of the teachers perceived working as a group as positive ($M=3.22$, $SD=1.03$). Teachers were also more positive about their technological pedagogical knowledge ($p<0.10$) after completing the online training. Rienties et al. [6] studied the effect of an online training with a team component on higher education teachers’ beliefs and intentions towards learning facilitation and technology. However, they could not find any significant changes in teachers’ beliefs towards learning facilitation, beliefs towards knowledge transmission and intentions towards learning facilitation. Finally, both Rienties et al. [5] as well as Rienties et al. [6] found that teachers were more positive ($p<0.05$) about their use of technology-enhanced learning during the post-test compared to the pre-test.

2.2 Learning

Five articles were found which report on the effect of a team-based professional development intervention on teacher learning. Deni and Malakolunthu [7] report that due to the participation in a teacher inquiry community, teachers broke away from old habits and adapted new strategies, made more use of practice-based teaching and experimented with new ideas. However, the authors did not specify these new strategies and ideas in their article. Furthermore, the authors state that teachers changed their teaching style to a more student-centred teaching style, and developed more empathy for students. The authors also state that the teachers learned how to address learning difficulties of students due to their participation in the teacher inquiry community. Finally, teachers were said to have learned to take students’ educational aims into account.

Green et al. [8] studied the implementation of a Community of Practice (CoP) in an Australian higher education institution. They found that teachers reported to have gained more knowledge about teaching and learning due to their participation in the CoP. The teachers “spoke of an expanded ‘repertoire’ for addressing a range of shared challenges, including increased diversity, group work, large classes, lecturing, tutorial activities, assessment and academic integrity” (p. 253). However, the article does not specify what this expanded ‘repertoire’ exactly entails. The authors also state that teachers said that they had gained an enhanced understanding of students (awareness for diversity, age, culture, learning styles etc.) and learning. Furthermore, Green et al. [8] reported that the teachers’ interest shifted from the pure content of their teaching to the teaching process. Teachers also said that they had a better understanding of evaluation due to participating in the CoP. They became critical of the “over-reliance on summative institutional evaluation” (p. 255). Additionally,

teachers' sense of what it means to be a university teacher changed. Finally, the authors reported that a lot of teachers identified a 'virtuous cycle' of teaching better, because they felt more valued for teaching by the other team members, which gave them more confidence; this in turn encouraged them to experiment with new innovative practices, and their resulting success further increased their confidence.

In the study of Leppisaari et al. [4], the authentic learning principles implemented in the international teacher learning community are said to have opened up new possibilities and ideas for teachers on how they can improve their teaching. However, the authors are not specific about the ideas and possibilities the teachers report about.

Rienties and colleagues published two studies on the effect of an online program called MARCH^{ET} on teachers' TPACK. Both studies quantitatively measured whether the participants experienced a gain in TPACK and its components due to the training by using a pre-test/post-test design. Rienties et al. [5] were able to detect a significant ($p < 0.05$) increase in the overall TPACK score of the post-test compared to their pre-test. Rienties et al. [6] also found that teachers experienced a significant gain in overall TPACK ($p < 0.05$) as well as technological pedagogical knowledge ($p < 0.05$) due to an online training. A significant increase in teachers' technological content knowledge after the training could not be found in both studies. Furthermore, teachers reported an increase in their content and pedagogical knowledge ($p < 0.10$) in the study of Rienties et al. [5], but not in the study of Rienties et al. [6]. In both studies teachers did not report to have gained more expertise in teaching in collaborative learning due to the training. In the articles of Rienties et al. [6] the authors also measured whether the intended shift from a teacher-centred to a more student-centred approach to teaching had been realised. They found a significant change ($p < 0.05$) in teachers' intentions towards knowledge transmission during the post-test compared to the pre-test.

2.3 Conditions

In the literature about teams in higher education, several conditions for successful professional development in teams have been identified. In the following section, these conditions are categorized into three groups: conditions at the individual teacher level, conditions at the team level, and conditions at the organizational level.

Conditions at the individual teacher level

Attitudes Although teacher attitudes can be an outcome of professional development interventions, teacher attitudes prior to the start of a professional development intervention can also be a success factor for these interventions. According to Bakah et al. [3], the attitudes of teachers regarding design teams are an important condition when it comes to the sustainability of these teams. Margalef García [9] states that prior participation in formative professional learning activities is positive for the progress of the teacher team. She argues that formal trainings or seminars have "made it possible [for teachers] to develop positive attitudes towards reflective practice, a greater willingness to continue learning and enquiring into the teaching practice and a certain sensitivity required in order to accept constructive criticism" (p. 146).

Motivation The external motivation experienced by participants with regard to the implementation of an innovation can be influential to the success of a team-based intervention as well. Teachers who feel that the professional development intervention is externally forced on them may have difficulties to live up to their full potential. In the study of Blanton and Stylianou [10], teachers had little control over

the implementation of new ideas they gained through participating in their community of practice because, as mathematics teachers, they often had to fulfil service roles to other disciplines. It was therefore “difficult to move the conversation of the group beyond an external locus of control in choices about curriculum for their early undergraduate experience” (p. 89).

Self-efficacy Implementing new practices or processes can bring about self-efficacy issues. According to Margalef García [9] and Roblin and Margalef [11], teachers in teacher learning communities or teacher inquiry communities face the dilemma of wanting to innovate but having to face insecurity in doing so.

Conditions at the team level

Trust A condition for successful professional development in teams is the level of trust within the team. According to Keevers et al. [12], trust and strong social relationships enhance the capacity of virtual transnational teaching teams for creating collaborative learning spaces among students. Leppisaari et al. [4] see trust as an important factor when it comes to internationally operating virtual learning communities as well. According to them, “factors of trust can form an obstacle in virtual international work at an institutional level” (p. 184). Building an adequate trust-level and good social relationships between team members within virtual teams can be challenging as face-to-face meetings are often not possible. Leppisaari et al. [4] describe that benchmarking relationships between team members within their virtual learning community could only be established after a meeting on Skype or telephone, or via email meetings. Distant contact alone was not sufficient. According to Margalef García [9], interactions between team members are especially important to strengthen the sense of belonging and to create a climate of trust.

Cohesion Cohesion (also called team-spirit) within a team can be a success factor for a team-based professional development intervention as well. According to Margalef García [9], group cohesion as well as the interaction between team members “help the Innovation Groups progress from one maturity level to another” (p. 144).

Goals & objectives Roblin and Margalef [11] describe that teachers in teams face the dilemma of either pursuing their own goals and interests, or balancing their own goals and goals of the community. According to Margalef García [9], when there is clarity about the objectives of a teacher learning community, the team advances more quickly.

Communication The communication within a team, meaning the open information sharing between team members, can also play an important role as a success factor for a team-based professional development intervention. According to Leppisaari et al. [4], sharing and articulation of expertise can be challenging. In their study, sharing one’s expertise and experiences with team members had a positive impact on peer development.

Team heterogeneity Team heterogeneity can be an important factor for team-based professional development. Blanton and Stylianou [10] state that it is important to develop teachers with experience (old-timers) as well as more inexperienced teachers (newcomers). They see old timers as essential in helping newcomers grow accustomed to the practices of the community. Deni and Malakolunthu [7] describe how teacher inquiry community sessions can serve different purposes for experienced teachers and inexperienced teachers. In their study, “for the more senior and experienced teachers, the sessions provided reinforcement, redefinition, and greater clarification of the conceptions they already knew; for the others, they served educationally” (p. 566). Green et al. [8] also show these differences between

experienced and inexperienced teachers within CoPs in their old-timers' tale and newcomers' tale. They describe old-timers as having a strong sense of agency and displaying self-directed learning. The old-timers constructed "their own curricula-in-action from a range of professional learning opportunities" (p. 256), whereas newcomers are "more individualistic, and more pragmatic, focused on professional survival" (p. 260). Keevers et al. [12] state that a status difference based on formal qualifications in relation to research can be said to have influenced peer-to-peer interactions in the transnational teaching teams they studied.

Language Another condition for successful professional development in teams that is mentioned in literature is a common language for talking about practice, meaning a set of terms that is shared and understood by all team members. Blanton and Stylianou [10] describe the "need for a language to mediate thinking about practice" (p. 89).

Team leadership Leadership within the team can play an important role for the success of a team-based professional development intervention as well. The preliminary results of Margalef García [9] indicate that the leadership of group members within a teacher learning community or the leadership of the team's coordinator are important for the community's progress. However, she does not specify how leadership influences this progress.

Conditions at the organizational level

Time A challenging factor for team-based professional development can be time. According to Leppisaari et al. [4], teachers need time to master new operational methods and tools. Moreover, teams often find it difficult to find the time to meet. Leppisaari et al. [4] describes that the "busy day-to-day schedules of teachers [...] often hindered commitment to the project" (p. 184-185).

Support In order to ensure the sustainability of team-based professional development interventions, the teams need to be supported by the management. According to Bakah et al. [3], teacher design teams have to be incorporated in the structure of the higher education institution and need to be better managed by the institution. Blanton and Stylianou [10] also state that the sustainability of communities of practice "requires institutional leadership to support the institutionalizing of professional development" (p. 85). Furthermore, Bakah et al. [3] say that leadership has to see the worth of teacher design teams and express commitment to their course to ensure sustainability. Margalef García [9] describes the importance of a facilitator (an external person supporting the team) for the progress of a teacher learning community, as the facilitator makes teachers more aware of their tacit theories. Furthermore, Margalef García [9] states the importance of institutional support and recognition from colleagues for the progress of a teacher learning community.

Culture for professional development Another success factor of team-based professional development is said to be the culture regarding professional development within the higher education institution. According to Blanton and Stylianou [10], a culture of learning has to be established to make the implementation of a teaching community more successful. It can be hard for teachers who are experts in their research field to enter into a teaching community as a learner. A culture of learning within the institutions can help teachers with this identity shift [10].

3 CONCLUSION

Our preliminary results indicate that team-based teacher professional development in higher education can have positive effects on the participants' attitudes. Participating

in a team-based professional development intervention can have a positive effect on the participants' attitude towards this intervention [3]. Furthermore, teachers value team-based interventions as an opportunity for professional development. Moreover, participants often gain a positive attitude towards collaboration by participating in various kinds of teacher teams. However, not all participants always perceive working in a group as positive [5]. Furthermore, participating in professional development programs with a team component can positively influence the participants' attitude towards the topic of the program. However, more research is needed on the effects of team-based interventions on teacher attitudes.

Participating in a team-based professional development intervention in higher education can also have positive effects on teacher learning. Our preliminary results indicate that by participating in this kind of interventions, teachers gain more knowledge about teaching and learning. They develop and experiment with new teaching techniques and strategies. By participating, teachers can also improve their teaching styles. They gain a better understanding of their students and can better meet their students' needs. A key component in this regard seems to be the possibility to exchange knowledge and ideas with other team members.

Finally, due to our review we were able to identify several conditions for team-based professional development interventions that are mentioned in the literature until now. All of these conditions can be categorized into three levels: individual teacher level, team level and organizational level. Conditions at the individual level include teacher attitudes, teacher motivation and teachers' self-efficacy beliefs. Conditions at the team level include the feelings of trust between team members, the cohesion within the team, the clarity of the teams' goals and objectives, the communication within the team, the team heterogeneity, whether there is a common language about practice, and team leadership. Finally, conditions at the organizational level that are mentioned in the literature are the time teachers have for participating in the professional development intervention, the support the team gets from management, and the culture for professional development that is established at the university.

4 DISCUSSION

The preliminary results of our review reveal that there are only a few publications on team-based professional development in higher education until now. Furthermore, the studies that are published on this topic are often of a lesser quality. Therefore, several publications did not meet our inclusion and exclusion criteria, which left us with 10 publications on this topic until now. Several of the publications that are included in these 10 also have small deficits, meaning that they met enough, but not all of our quality criteria. Several of these articles are experience reports of teachers participating in a team-based professional development study. The report of results of these publications is often less exact. However, these articles were included because they give us valuable first-hand information that other studies cannot. Furthermore, most of the studies included in our review were qualitative studies. Only a few quantitative or mixed method studies could be found. In addition, we included various types of team based professional development interventions in this review, ranging from solely team-based interventions like CoPs to larger training programs with a team component, and from local teams to international teams. It is therefore questionable how comparable these studies are.

There is a great need for large scale quantitative studies as well as more in-depth qualitative studies on the topic of team-based professional development interventions in higher education. It is desirable to publish more mixed method studies that combine large scale quantitative data and in-depth qualitative data. Research is

needed about the effects of team-based professional development interventions, also including the effects on student level, as well as research about the conditions under which team-based professional development is most successful. Although some conditions have already been identified, the question remains whether there are additional conditions and whether all conditions are equally important.

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