A qualitative analysis of teacher design teams: In-depth insights into their process and links with their outcomes

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ABSTRACT

Teacher Design Teams (TDTs) are professional learning communities in which teachers collaborate to (re)design innovative educational materials. TDTs can contribute to teachers' professional growth. Furthermore, engaging teachers in the design process could create ownership, increasing the likelihood that teachers actually use the innovative materials in practice. In this study, we aimed to obtain in-depth insights into the TDT process and to identify possible links with the outcomes. We studied three cases of TDTs, collecting qualitative data from multiple perspectives. We found that the perceived outcomes of the TDTs were mixed. The leadership style appeared to play an important role in shaping the process and hence the perceived outcomes. To improve the outcomes of future TDTs, insights from this study suggest that team coaches should provide more structure and clarity during the process. At the same time, the coaches should create an atmosphere in which participants can take the initiative.

1. Introduction

Professional development programs for teachers involving collaboration are considered to be highly effective, as they can build teachers' individual and collective capacities (Avalos, 2011; Crow & Pounder, 2000; Hardré et al., 2013; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006; van Driel, Meirink, van Veen, & Zwart, 2012; van Veen, Zwart, Meirink, & Verloop, 2010). Therefore, the concept of Professional Learning Communities (PLCs) – which are groups of teachers focused on collaborative learning through sharing experiences and critical reflection – has received much attention in many countries (Stoll et al., 2006). Well-designed PLCs can contribute to improved teaching practice and student achievement (Vescio, Ross, & Adams, 2008). PLCs can either have participants from the same school (school-based PLCs) or participants from various schools (networked PLCs). Various studies have indicated that networked PLCs are needed for actual school improvement, as they have the potential to move beyond the knowledge that is available within a single school (Bryk, Gomez, & Grunow, 2011; Chapman, 2014; Hofman & Dijkstra, 2010).

A Teacher Design Team (TDT) is a specific type of PLC that can be defined as 'a group of at least two teachers, from the same or related subjects, working together on a regular basis, with the goal to (re)design and enact (a part of) their common curriculum'(Handelzalts, 2009). As with other types of PLCs, TDTs can be either school-based or networked. Studies have shown that TDTs can contribute to teachers' professional development (Bakah, Voogt, & Pieters, 2012b; Kafyulilo, Fisser, & Voogt, 2014; Voogt et al., 2011). By sharing expertise and experiences while designing educational materials, teachers can gain new knowledge and skills and can use these to improve their overall teaching practice. Additionally, as teachers who participate in a TDT are engaging in designing concrete educational materials, they are not only exposed to new teaching practices, but also actively shape their teaching practice (Voogt et al., 2011). This is crucial for teachers, as designing materials is considered to be a core aspect of teachers' work (Carlgren, 1999). In particular, this is important in the case of educational innovations. The success of educational innovations largely rests on the shoulders of teachers, as they are expected to put the innovative ideas into practice (Huizinga, Handelzalts, Nieveen, & Voogt, 2013). Designing concrete educational materials in TDTs could create a sense of ownership of these innovations, which increases the likelihood that teachers would actually adapt their classroom practice accordingly (Bakah, Voogt, & Pieters, 2012a; Visser, Coenders, Terlouw, & Pieters, 2012; Wikeley, Stoll, Murillo, & De Jong, 2005). Therefore, TDTs can also contribute to sustainable implementation of educational innovations (Handelzalts, 2009; Johnson, Severance, Leary, & Miller, 2014; Mooney Simmie, 2007).

1.1. Problem statement

As TDTs can yield both professional development and innovative educational materials, they can be very valuable for teachers. Although several studies have indicated how individual characteristics of TDTs can influence part of their outcomes (e.g. Boschman, McKenney, & Voogt, 2015; Huizinga, Handelzalts, Nieveen, & Voogt, 2014), there is little empirical research available that evaluates how the complete process of TDTs works and how aspects of the process are linked with their perceived outcomes in terms of both professional development and the designed material. More thorough, in-depth understandings of the TDT process and outcomes are required to evaluate how TDTs could best be organized to promote the outcomes of TDTs in the future. Therefore, the aim of the present study is to obtain in-depth insights into the TDT process and to explore potential links with the perceived outcomes of TDTs.

1.2. Theoretical framework

Several studies about TDTs and other types of (networked) PLCs have indicated essential characteristics and potential outcomes. In our previous study, we aggregated these findings and developed a descriptive framework that includes all key elements that are important for understanding the TDTs' process and outcomes (Binkhorst et al., 2015).

To address how the key elements of the process are related to the outcomes, the following theory of action for professional development can be used (Desimone, Smith, & Philips, 2013): (1) teachers experience professional development with effective features; (2) the professional development increases teachers' knowledge and skills and/or changes their attitudes and beliefs; (3) teachers apply their new knowledge, skills, attitudes and beliefs to improve their instruction, their pedagogy or both; and (4) these instructional changes foster increased student learning. In the context of TDTs, this means that teachers who participate in a TDT that includes effective features during the process can gain new knowledge and skills and use them to improve their teaching practice, which can foster increased student learning. Additionally, as TDTs are also focused on designing specific educational materials, we use an analogous theory of action: TDTs that include effective features can also result in new educational materials that can be used in practice.

In this section, we will use the descriptive framework from our previous study to first discuss the potential outcomes of TDTs in terms of *professional development*, the designed material and the *sense of ownership* of the TDT. Subsequently, we will address the key elements of the TDT process, including the *process features* (i.e., team interaction, goal alignment, activities and organization of the TDT) and the *leadership style*. The descriptive framework is depicted in Fig. 1.
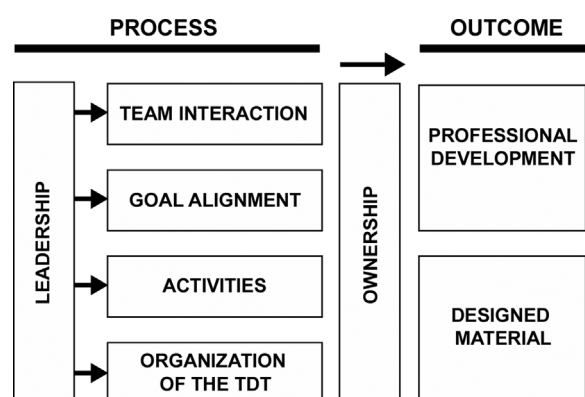

Fig. 1. Descriptive framework for TDTs including process and outcome stage.

1.3. Professional development

As explained in the introduction, teachers' professional development is one of the main objectives for TDTs. Teachers who participate in a TDT can gain new knowledge and skills, such as pedagogical knowledge, content knowledge, design skills or professional skills such as networking (Bakah et al., 2012b; Huizinga et al., 2014; Kafyulilo et al., 2014; Voogt et al., 2011). As Desimone et al.'s (2013) theory of action suggests, students can only benefit from this new knowledge and skills if teachers use them in practice.

To assess the professional development of TDT participants, we use three levels (Desimone et al., 2013; Guskey, 2002; Kirkpatrick, 1996). The first level concerns the teachers' initial **satisfaction** with the TDT. How was their experience of it and were they happy with the TDT? The second level is the teachers' **learning**: did the participants gain new knowledge and skills? The third level is when teachers actually apply these new understandings and skills and **change their behaviour** in the classroom. An example of such application could be when teachers change the way they teach by applying new strategies for instruction.

1.4. Designed material

The second main objective for TDTs is developing educational materials. The type of material the participants develop depends on the focus of the TDT. For example, they can choose to design a complete educational module that takes several weeks to teach, or they can design several smaller instructional units, such as experiments, digital quizzes or tests.

To evaluate the designed material, its **perceived quality** can be assessed. As with the professional development, we also evaluate a further level: the **actual use** of the designed material after it was designed. Here we need to note that schools in the Netherlands are characterized by great autonomy (OECD, 2014): schools and their teachers are highly autonomous on matters regarding curriculum planning and assessment, as compared to other countries. For example, schools and teachers can choose which teaching methods or textbooks they use. Therefore, participants from our TDTs can choose whether they actually use the designed material or not.

1.5. Sense of ownership

Although professional development and the designed materials are the main objectives for TDTs, to reach the higher levels of the outcomes (change of behaviour in classroom and actual use of the material), a sense of ownership is desired. As we explained in the introduction, a sense of ownership of the innovation is likely to develop in TDTs, as teachers are engaged in designing innovative educational material (Bakah et al., 2012a; Cviko, McKenney, & Voogt, 2013; Visser et al., 2012). In this way, the professional development and the designed materials are adapted to teachers' own practice, which increases the chance that teachers will implement the innovations (Wikeley et al., 2005). However, previous research indicated that TDT participants do not always implement innovations in practice (Binkhorst et al., 2015). This implies that designing materials in TDTs might not automatically lead to ownership of the innovation and hence implementation.

Other studies conceptualized ownership as 'ownership of an organization', or 'ownership of a community' (Avey, Avolio, Crossley, & Luthans, 2009; Buchem, 2012; Lee & Suh, 2015). These studies indicate that ownership of a community can lead to positive attitudes and behaviours (Avey et al., 2009; Lee & Suh, 2015). Applying this broader definition of ownership to TDTs might explain why certain participants do change their teaching practice and use the designed material and others do not.

Ownership of the TDT can be defined along four dimensions (Avey et al., 2009). First, **self-efficacy** is a person's belief that he can succeed at a specific task and that he can make a substantial contribution. Second, **accountability** is the feeling that everyone in the team can be