Strengthening networks: A social network intervention among higher education teachers

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ARTICLE INFO

ABSTRACT

Teachers' opportunities to learn at the workplace are shaped by the relationships in which they discuss their instructional practice, what we call *teaching networks*. This study examined the extent to which such teaching networks could be strengthened during a professional development (PD) program. An intervention was designed to evaluate whether the development of teaching networks was affected in terms of network composition and access to teaching content. Longitudinal ego-network data of Belgian university teachers (N = 38, 1670 ties) were collected over a two-year time period. Multilevel analyses showed that the intervention group developed larger networks and increased network dynamics, compared to the control group. The intervention group also developed more diverse networks, and showed increased access to teaching content, suggesting that the intervention changed teachers' networks over time. This study shows the potential of network interventions to support teachers' professional development, and of network analysis as a tool to analyze professional relations.

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1. Introduction

Traditionally, calls for professional development of teachers have been answered with formal training initiatives (Avalos, 2011; Saroyan & Trigwell, 2015), i.e. structurally organized professional development (PD) programs aimed at enhancing teaching and learning. Yet, across the globe, informal learning is increasingly recognized as an important driver for ongoing professional development (Kyndt, Gijbels, Grosemans, & Donche, 2016) as most learning within the teaching profession takes place through collegial interaction and transcends boundaries of formal programs (Lieberman & Pointer Mace, 2008; Vangrieken, Dochy, Raes, & Kyndt, 2015). The current body of research on PD programs mainly focuses on the knowledge and skills of individual teachers. Scholars increasingly suggest to complement this research with a

focus on teachers' networks, aimed at enhancing teachers' access to resources through social relationships (A. Fox & Wilson, 2015; Penuel, Sun, Frank, & Gallagher, 2012). Recently, emerging research highlights the importance of the personal teaching networks that surround participants during PD programs (Van Waes, Van den Bossche, Moolenaar, Stes, & Van Petegem, 2015b; Rienties & Kinchin, 2014). These scholars have suggested that for PD programs to be effective and sustainable, participants have to learn to recognize and access their network. However, most research is limited to descriptive accounts of networks and little is known about if and how teachers can strengthen their networks.

Given this gap, the central aim of this study is to examine the extent to which teaching networks can be strengthened during PD programs. In specific, we focus on academics who teach at the university. For this set of teachers, informal learning is of particular importance as university teachers traditionally begin teaching in higher education with little or no formal training. Being an expert in the content field is assumed to be a sufficient condition to teach others (Denicolo & Becker, 2013). Over the past two decades, improving university teaching standards has been the driver of interest in academic development internationally (Baume, 2006;

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Devlin & Samarawickrema, 2010). Isolated practice is considered an inadequate way of performing teachers' work (Bakkenes, De Brabander, & Imants, 1999). Yet, issues of privacy, autonomy, and even isolation in higher education have been quite prominent (Cox, 2004; Ramsden, 1998).

This study draws on research on performance, expertise development and on social network research to explore the role of networks in supporting professional development, and more specifically, the potential of network interventions for university teachers' professional development.

1.1. A network perspective on professional development

Studies on workplace learning of professionals are increasingly taking a social perspective on development to understand its relational and interactive nature (Gruber, Lehtinen, Palonen, & Degner, 2008; Tynjälä, 2008). The urge to capitalize on social interaction is reflected by a growing number of concepts that aim to improve this social side of learning, such as communities of practice, professional communities, and networks (Louis & Marks, 1998; McLaughlin & Talbert, 2006; Wenger, McDermott, & Snyder, 2002). In education, the development of teachers is no longer regarded as an individual endeavor, rather, it is placed within the larger network of relationships that surrounds the individual (Moolenaar, 2012). Social network theory provides a valuable lens and the tools to examine professional interactions of teachers (Carolan, 2014). The key assumption of social network theory is that individuals' behavior and performance are significantly affected by the way that they are tied into a larger web of social connections (Burt, 1992; Granovetter, 1973). Interest in teachers' professional interactions has sparked an important body of research into the meaning and potential of networks. This research has established the significance of teaching networks for student achievement (Pil & Leana, 2009), teacher development (Van Waes, Van den Bossche, Moolenaar, De Maeyer, & Van Petegem, 2015a; Van Waes et al., 2016), reform and improvement (Daly & Finnigan, 2011), policy implementation (Coburn & Russell, 2008), and leadership (Pitts & Spillane, 2009).

1.2. Teaching networks in professional development (PD) programs

The recognition of the importance of networks for professional development, affects our thinking around PD programs. Up until now, teacher interaction during PD programs has mostly been reported as a side-effect while studying PD programs from a mainly individual perspective (Postareff, Lindblom-Ylänne, & Nevgi, 2007; Stes, Clement, & Van Petegem, 2007). Recently, a small body of research emerged using a social network perspective to study the extent to which teachers actually engage in interactions around their teaching practice during and beyond PD programs. Findings showed that within PD programs, teachers' connections with other participants increased over time (Moses, Heestand Skinner, Hicks, & O'Sullivan, 2009; Rienties & Kinchin, 2014). Furthermore, teachers also increasingly engaged in collegial interaction outside the PD program, with colleagues in the department or grade (Van Waes et al., 2015b; Gamoran, Gunter, & Williams, 2005). These connections are considered valuable since teachers' approaches to teaching can be shaped by the perceptions of the cultures into which they are inserted (Roxå & Mårtensson, 2009; Spillane, Kim, & Frank, 2012). However, PD programs do not automatically influence the networks of every teacher involved. In specific, a recent longitudinal study on network development in PD programs showed that while on average, networks changed significantly, this study also discerned different profiles of network change (stable, flexible, expansive, isolated) showing some university teachers that did not

change their networks during the program, nor connected with others about their teaching practice (Van Waes et al., 2015b).

1.3. Interventions to strengthen networks

Scholars are increasingly suggesting that for PD programs to be effective and sustainable, participants have to learn to recognize and access their personal teaching network (Baker-Doyle & Yoon, 2010; Penuel et al., 2012). Some studies contain suggestions for further research on how to promote or support network development in PD programs, e.g. assisting participants in recognizing the potential of collegial interactions, implementing critical friend systems and peer observations, or involving colleagues from the workplace (Gerken, Beausaert, & Segers, 2016; Thomson, 2015). Yet, to our knowledge, the current body of work provides little empirical insight into the extent to which teaching networks can actually be strengthened.

Recently, network interventions have been developed to support professionals and organizations to intentionally act on their networks (Cross & Thomas, 2009; Parise, 2007). Network interventions are purposeful efforts to use social network data to accelerate behavior change, to improve performance, or diffuse innovations (Valente, 2012). Valente (2012) presents four strategies to use network data for intervention: (i) identifying individuals (e.g., key players or opinion leaders) for diffusion purposes: (ii) segmentation to identify groups of people to change at the same time; (iii) induction to create cascades of information diffusion (e.g., word of mouth, respondent-driven sampling); and (iv) alterations that change the network. These interventions often build on the underlying assumption that individuals, who are aware of their networks and the resources and expertise residing in it, are more likely to reach out to the 'right' people at the 'right' time when presented with challenges or opportunities (Borgatti & Cross, 2003). Teachers who consciously act to strengthen their network, display what is recently coined as 'network intentionality' (Moolenaar et al., 2014), that is, agency in forming, maintaining, activating, and dissolving relations to gain access to resources for the mutual benefit of oneself and others, given their own cognitions of what makes for a 'good' network (Nardi, Whittaker, & Schwarz, 2002). Outside education, scholars have provided evidence that professionals who learned the properties of an effective network, achieved greater performance and career advancement (Burt & Ronchi, 2007). As such, increasing university teachers' network awareness and intentionality may be a valuable element in a PD program for these teachers. This study designed an intervention to strengthen university teachers' networks in support of their professional development as teachers.

1.4. Network features related to professional performance

The literature on performance and expertise development of professionals provides insight into high leverage network features (Cross & Thomas, 2008; Lin, Cook, & Burt, 2001). These network features can relate to the composition (the different actors in the network and their attributes) or content of the network (what actually flows through relationships).

Network composition can be explored by measuring the size (e.g., number of relationships that are new, lost or kept) and diversity of networks (e.g., in experience and expertise). Earlier research outside education has suggested that these personal network features are related to professional performance. For instance, high performers engaged in professional interactions with a relatively large number of people (Van Waes et al., 2015a; Parker, Halgin, & Borgatti, 2016). This does not mean that networks have to be large per se (Roxå & Mårtensson, 2009). In this regard, two tracks