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Understanding (in)formal learning in an academic development programme: A social network perspective

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HIGHLIGHTS

- Teachers do not follow professional development (PD) in isolation.
- 36% of Learning relations were knowledge spillovers (inter-group learning).
- Group divisions and departments impact PD.
- Substantial external relations developed, requiring a broader perspective of PD.

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ABSTRACT

Most professional development programmes provide teachers with formal and informal social networks, but limited empirical evidence is available to describe to what extent teachers build internal (within their programme) and external (with colleagues not involved in the programme) social learning relations. We triangulated Social Network Analysis with qualitative free exercise responses. Participants developed on average 4.00 internal and 3.63 external relations, and discussed teaching 128 times per year with externals. MRQAP modelling indicates group division, department, and friendships predicted learning ties. These findings indicate that research on impact of teacher education should widen its focus beyond the formal programme boundaries.

1. Introduction

Across the globe, several researchers (Ebert-May et al., 2011; Rienties, Brouwer & Lygo-Baker, 2013; Stes, Min-Leliveld, Gijbels, & Van Petegem, 2010) have suggested that higher education institutions (HEIs) should provide adequate professional development, training and staff support for new academics. In a range of European countries, including Belgium (Stes et al., 2010), Finland (Postareff, Lindblom-Ylänne, & Nevgi, 2007), the Netherlands (Rienties, Brouwer, et al., 2013), the UK (Norton, Aiyegbayo, Harrington, Elander, & Reddy, 2010; Parsons, Hill, Holland, & Willis, 2012), and the US (Ebert-May et al., 2011), most universities have implemented some form of academic or professional development (PD) for new academics.

Recently several researchers in the US and Europe have urged for more robust research on the effects of these PD programmes (Lawless & Pellegrino, 2007; Rienties, Brouwer, et al., 2013; Stes et al., 2010). Although a large number of PD studies have focussed on learning satisfaction (for overview, see Stes et al., 2010), academic identities (Crawford, 2010), or (perceived) changes in teaching approaches by participants (Ebert-May et al., 2011; Postareff et al., 2007; Rienties, Brouwer, et al., 2013), limited research has been conducted in order to assess whether participants also learn from the experiences of other participants in their PD programme. As reflection on teaching practice and engagement in dialogues with colleagues is assumed to be of crucial importance for PD (Kinchin, Lygo-Baker, & Hay, 2008; Moolenaar, Sleegers, & Daly, 2012; Postareff et al., 2007; Stes et al., 2010), limited studies are available whether participants indeed engage with each other and socially co-construct and share knowledge together beyond the "PD training room" (De Laat, Lally, Simons, & Wenger, 2006).

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More importantly, to the best of our knowledge no empirical study is available to what extent participants engage in dialogues with people outside the formal PD programme (e.g., friends, family, partner, departmental colleagues, or colleagues at other institutions) about teaching and learning. In line with ideas of Communities of Practice (De Laat et al., 2006; Wenger, 1998), uptake of PD may be dependent on the "external" network of participants (Akkerman & Bakker, 2011; Jones, Ferreday, & Hodgson, 2008; McCormick, Fox, Carmichael, & Procter, 2010) and/or the organisational cultures within the participants' departments (Daly & Finnigan, 2010; de Lima, 2007). As argued by Moolenaar et al. (2012), due to teachers' formal and informal interactions with colleagues and other network contacts, teachers may passively or actively engage in a dialogue with others about their teaching practice. In a study of 53 primary schools in the Netherlands, Moolenaar et al. (2012) found that cohesiveness of teacher networks in schools increased collective efficacy, and indirectly influenced children's achievement.

As argued by Daly and Finnigan (2010) and Rienties and Nolan, 2014, these (internal/external) PD links cannot be easily measured by traditional educational psychology instruments. However, methods like Social Network Analysis (SNA) can allow researchers to make these informal relations amongst participants and people outside the PD visible, thereby potentially improving our understanding of the impact of PD activities. In line with Social Network theory (Katz, Lazer, Arrow, & Contractor, 2004; Wassermann & Faust, 1994), recently several educational researchers (e.g., Daly & Finnigan, 2010; De Laat, Lally, Lipponen, & Simons, 2007; Jones et al., 2008; de Lima, 2007; McCormick et al., 2010; Moolenaar, Daly, & Sleegers, 2010; Moolenaar et al., 2012) have explored how teachers build social network relations with other teachers, and what the underlying mechanisms are for creating a cohesive community of learning professionals (De Laat et al., 2006). In different domains in education research, researchers have also explored social (student) networks by focussing on inter- and intra-group dynamics within a social network (Akkerman & Bakker, 2011; Decuyper, Dochy, & Van den Bossche, 2010; Hommes et al., 2012; Rienties, Hernandez Nanclares, Jindal-Snape, & Alcott, 2013) in order to explore why some learners or groups are actively looking to extend their internal and external group network, while others are primarily focussed on their own group.

A consistent finding is that formal and informal social network relations influence with whom people learn (Daly, Moolenaar, Bolivar, & Burke, 2010; Hommes et al., 2012) and build communities to effectively learn together (De Laat et al., 2006; Wenger, 1998). At the same time, not every learner benefits equally from these social networks, as some learners become central nodes in the social network (De Laat et al., 2006; de Lima, 2007; Moolenaar et al., 2010) or brokers between different groups (Bohle Carbonell, Rienties, & Van den Bossche, 2011; Daly & Finnigan, 2010; Rienties, Tempelaar, Pinckaers, Giesbers and Lichel, 2010), while others have limited or no PD links.

The prime goal of this study is to understand to what extent teachers in a PD programme develop internal (within their formal programme) and external (outside their programme) social learning and teaching relations. In this explorative case-study, we triangulated (closed and open) Social Network Analysis (Hernandez Nanclares, Rienties, & Van den Bossche, 2012; Katz et al., 2004; Rienties, Hernandez Nanclares, et al., 2013) with a free-response exercise in order to compare and understand with whom 54 participants built and developed learning relations. SNA can be considered a wide-ranging strategy to explore and predict social structures to uncover the existence of social positions of (sub)groups within a network (Curşeu, Janssen, & Raab, 2012; De Laat et al., 2007; Katz et al., 2004; Krackhardt & Stern, 1988; Rienties, Hernandez Nanclares, et al., 2013). While some researchers (McCormick et al., 2010) indicate that SNA techniques provide limited insights in teachers' networks and can only be used as a metaphor how teachers develop networks, in this explorative study we aim to illustrate that SNA can be a useful method for academic developers, programme directors and researchers to obtain insights in the (in) formal learning of PD.

2. Social network theory and analyses

A social network consists of set of nodes (i.e., participants in a PD programme) and the relations (or ties) between these nodes (Wassermann & Faust, 1994). In social network theory, the focus of analysis is on measuring and understanding the social interactions between entities (e.g., individuals, teams, schools), rather than focussing on individual behaviour (Katz et al., 2004). A general assumption of social network theory is that people's behaviour is best predicted by the web of relationships in which they are embedded.

Research in the context of primary school teachers in the US, the Netherlands and Portugal have shown that social networks have a strong impact on trust, collective efficacy (Moolenaar et al., 2012), sharing of lesson materials (de Lima, 2007), teacher involvement in shared decision-making (Daly et al., 2010; de Lima, 2007), and schools' innovative climate (Coburn & Russell, 2008; Daly & Finnigan, 2010; Daly et al., 2010). For example, when comparing two different departments in the same Portuguese primary school using SNA, de Lima (2007) found that "teachers seemed to live in totally distinct worlds, both from a professional and from a social point of view". In a US study amongst five primary schools in an under-performing school district, Daly et al. (2010) found significant differences between schools in terms of reform-related social networks. "[R]eform goes through several layers of modification prior to teaching the classroom. The reform is first interpreted by the principal, modified at the grade level, and then finally delivered in the classroom" (Daly et al., 2010, p. 375).

2.1. Social capital theory and teacher's social network

While McCormick et al. (2010) doubt whether SNA research can be used to measure the complexity of teachers networks, numerous researchers have found that SNA networks provide robust and accurate depictions of actual learning processes and social networks (Curşeu et al., 2012; De Laat et al., 2007; Hernandez Nanclares et al., 2012; Hommes et al., 2012; Katz et al., 2004; Rienties, Hernandez Nanclares, et al., 2013). Most social network studies in education use social capital theory to explain how teachers develop and maintain formal and informal learning relations (e.g., Coburn & Russell, 2008; Daly et al., 2010; de Lima, 2007). Social Capital is a concept with probably the largest growth area in organisational network research (Borgatti & Foster, 2003; Reagans & McEvily, 2003; Rienties et al., 2010), which is concerned with the value of the resources that social network ties hold. Social capital can be defined as "resources embedded in a social structure which are accessed and/or mobilized in purposive action" (Lin, 2001, p. 12).

Generally there are four explanations why sources embedded in social networks may enhance the returns on an individual's actions (Lin, 2001). The first explanation is that embedded resources facilitate *information flows* between teachers, which consequently reduces the transaction costs, such as sharing of materials, new innovative practices, or lessons-learned (Coburn & Russell, 2008; de Lima, 2007). Second, social ties have a substantial *influence* upon how teachers deal with PD and organisational change (Daly