A Social Network Analysis of School Advice-Seeking Patterns to Support Vulnerable Learners: A Critical Methodological Account

Introduction

Supporting the learning and wellbeing of vulnerable students is a complex part of school educators' work. Although research has suggested that collaboration among colleagues can help them meet the needs of at risk students, there is less research on the institutional cultures of collaboration. In this study, we explored the social networks of advice among school staff on supporting the learning and wellbeing of vulnerable students. The project examined the different patterns of collaboration to support vulnerable learners between teachers in six English secondary schools. A mixed methods approach was used that combined findings from Social Network Analysis (SNA) with in-depth interviews. It was found that patterns of collaboration among staff varied substantively among the schools and that they were coherent with formal organisational structures. We are concerned with the ways in which the practices of a school community are structured by their institutional context and argue that social structures impact on the interactions between the participants and the skills, knowledge and understanding that reside in those institutions. We provide a constructive critique of SNA from the perspective of activity theory and argue that the fluidity of social relations within activity systems calls for a multi-layered approach to data collection.

Borgatti, Brass and Halgin (2014) point out that two common critiques of SNA research is that in focusing on a structural analysis of social relations it ignores the dynamics involved in (e.g. Watts, 2003) and that the research ignores the question of agency (e.g. Stevenson and Greenberg, 2000). This mirrors previous critiques by Emirbayer and Goodwin (1999) on the relationship between structural analyses of social network and questions of culture and human agency by Meittinen (1999) of actor network theory (ANT), who argues that because of ANT's equal treatment of human and non-human elements in a network 'ignores the role of human cognition, intentionality, and learning in the innovation process' (p. 182). From the perspective of activity theory, Engeström (1999) developed the concept of 'knotworking' in collaborative performance, which involves rapidly changing threads of activity, distributed expertise and improvisation. This sense of the fluidity of social relations within activity systems calls for a multi-layered or mixed methods approach to data collection.

It has been proposed that the way in which a school is formally organised affects the pattern of social relationships among educators (Moolenaar, 2010; Penuel et al., 2010). The formal organisation, arrangements for peer support and leadership encouragement in schools can facilitate and provide the structure for staff to engage in collaborative work. Studying how formal arrangements within schools relate to informal collaborative structures can significantly advance our understanding of the ways in which staff collaboration takes place. The way in which the social relations of institutions are regulated has cognitive and affective consequences for those who live and work inside them. This is part of a more general argument developed by the Russian social scientist L.S. Vygotsky. However rich the original inspirational texts are (e.g. Vygotsky, 1987) it is now recognised we need a social science that articulates the formative effects of a much broader conception of the 'social' than that

which inheres in much of the research which emanates from the writings of Vygotsky and his colleagues. Recent developments in post-Vygotskian theory have witnessed considerable advances in the understanding of the ways in which human action shapes and is shaped by the contexts in which it takes place. Daniels (2008) argues that institutions and the patterns of social interaction within them exert a formative effect on the 'what' and 'how' of learning. In this paper we examine the different patterns of collaboration between teachers in schools and the implications for their individual professional practice. We are concerned with the ways in which the practices of a school community are structured by their institutional context and argue that social structures impact on the interactions between the participants and the skills, knowledge and understanding that reside in those institutions.

Methods

This mixed-methods exploratory study, conducted in the academic year 2014-15, examined collaboration among school staff in relation to addressing the needs of vulnerable learners in six state secondary schools within an ethnically mixed city in the South East region of England with wide disparities between areas of wealth and poverty. The schools were selected to reflect the local diversity with regard to socio-economic background and academic performance levels. The sample schools were involved in a wider local partnership that aimed to raise standards and accelerate progress for students. The Head teachers of these schools were committed to the idea of fostering greater interaction among staff. In that sense, participant schools might be more focused on promoting collaboration than the majority of England's secondary schools. A mixed methods approach to data gathering was used to examine collaboration patterns. In order to try to capture same sense of this complexity within social networks, and the activities that the actors are engaged in, the mixed methods approach addressed different aspects of the research question (Gorard and Taylor, 2004): a quantitative analysis of social networks regarding collaboration within the schools and a qualitative analysis of the perceptions of some of teachers involved in these schools.

Quantitative survey data were collected to portray social networks and staff perceptions of school climate for collaboration. To this end, an on-line questionnaire was administered to 484 professionals working in the six participant schools. The instrument covered several background characteristics, including gender, the number of years each spent working in schools in general and in their current school in particular, perceptions of school climate for collaboration, and frequency and impact of collaboration with other colleagues in their school. A very satisfactory average response rate of 90%, with a range of 81% to 98%, was obtained.

Data were also collected using semi-structured interviews with key members of staff (Head teachers, SENCOs and classroom teachers) in order to triangulate the results obtained from the quantitative analysis, as well as to identify the types of informal collaborative practices

that take place in the sample schools and their perceived impact on teacher practice and vulnerable students' learning and wellbeing. Semi-structured interviews were conducted with four staff members from each school: the Head teacher, the Special Educational Needs Coordinator (SENCO), a long serving classroom teacher, and a recently qualified classroom teacher. Data collection took place between January and April of 2015.

Social network methods and qualitative research techniques are often used complementarily to study interactions in schools (e.g., Penuel et al., 2009; Daly et al., 2010), as the former provides a valuable detailed picture of the patterns of collaboration that can be further interpreted in the light of in-depth qualitative data. In line with previous research, this study suggests that despite sharing common context and intake characteristics schools vary significantly in their patterns of collaboration (Bakkenes et al., 1999; Daly et al., 2010; Dorner et al. 2011; Moolenaar et al., 2010; Spillane and Healey, 2010). This study also aimed to explore how institutional cultures of collaboration translate into patterns of teacher interactions. The findings also suggest that a positive collaborative school climate, characterised by mutual respect and shared responsibilities, is associated with denser and more reciprocal networks. This supports previous literature indicating that school culture is significantly associated with patterns of collaboration (Daniels, 2005).

Furthermore, in our sample, formal and informal school structures showed alignment to a greater extent than in the existent literature (Coburn, 2005; Penuel et al., 2010; Spillane et al., 2010). Contrary to what has been found in other contexts (Atteberry and Bryk, 2010; Coburn and Russell, 2008; Cole and Weiss, 2009; Kochan and Teddlie, 2005; Penuel et al., 2010; Spillane and Healey, 2010) formally appointed support staff seemed to play the intended central advisory function and were usually situated in a central position in their schools' advice network.

We have demonstrated the use social network analysis as a method to visualise and evaluate the specific nature of staff relationships in school. The potential of this innovative methodological approach for investigating collaboration in support of teaching and learning was also highlighted. This study advances the field as there is scarce research that examines the social networks of educators in England, and no previous studies were found that explores teacher advice-seeking networks in relation to supporting vulnerable students, internationally. This work has important implications for leadership, policy and practice. The findings underline the relevance of attending to relational linkages as a complementary strategy to the formal arrangements that can be put in place for supporting educators' work towards vulnerable students. A detailed analysis of patterns of collaboration within schools can support the design and implementation of teacher support programmes, which may ultimately improve student outcomes. Examining the structure of social networks can also assist educators in better managing patterns of interactions in support of, for example, novice teachers or those struggling with supporting vulnerable students. Reports from staff of who they turn to for advice in relation to supporting vulnerable students also allows researchers to identify and encourage the work of actors who play a central role even though they are not formally designated leaders.

A next step would be to look at the individual-level characteristics associated with greater likelihood of collaboration. For example, one could hypothesise that experienced teachers

are more likely to be approached for advice by their peers or that teachers sharing similar characteristics (e.g., gender, department membership, etc.) are more likely to interact with each other, in line with the principle of homophily in SNA (McPherson et al., 2001).

As with any piece of research this study is not free of limitations. For example, this project was informed by evidence that structures of collaboration between teachers enhance the quality of teaching in schools and outcomes for vulnerable learners. However, it was not possible to directly connect staff social interactions to student outcomes. An important avenue for future research is to investigate whether schools whose teachers engage in more informal collaborative practice have a greater impact on the learning and wellbeing of vulnerable learners.

Also, as in the majority of studies in the field, we rely on cross-sectional small-scale data, which limits the possibility to generalise our findings to other contexts and to provide evidence on causal relationships. A large-scale study with a longitudinal design would allow us to explore the mechanisms through which school culture and collaborative practices influence each other.