Social Network Analysis in the field of Learning and Instruction: methodological issues and advances

Research Theme

In this EARLI Advanced Study Colloquium (ASC), we address a coherent set of current theoretical and methodological challenges in applying social network analysis in the field of learning and instruction.

Proposal Summary

Social network analysis (SNA) has become an important theoretical and methodological framework to investigate the field of learning and instruction. This importance is illustrated by the surge in SNA-related publications in this domain of research—from 37 in 2003 to more than 400 a decade later in the ERIC database (see Figure 1).
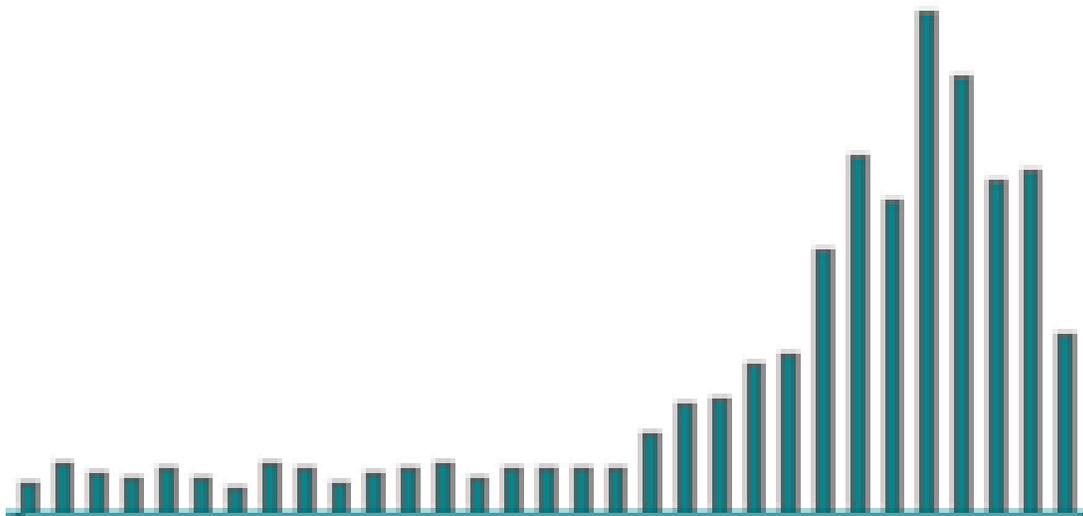

Figure 1: Chart of the number of SNA-publications from 1986 to 2016 (Source: ERIC).

Despite this huge increase in applying SNA in the field of learning and instruction in the last decade, several themes still seem underdeveloped. There is a pressing need to discuss these important challenges in theory and research design in the field of learning and instruction in detail. This ASC provides an important platform to have this discussion and represents a crucial step towards addressing the challenges outlined below.

Challenge #1: Mixed methods approaches to social network analysis in learning and instruction

Recently, more and more criticism is voiced against the high reliance on quantitative methods of social network analysis. One solution that had been proposed is to include qualitative approaches on top of the quantitative procedures (Bolíbar, 2015; Domínguez & Hollstein, 2014). Such mixed methods social network analysis (MMSNA) may resolve some of the limitations that a purely quantitative approach has. Indeed, social network analysis increasingly relies on both quantitative and qualitative approaches to gather and analyze data (Froehlich, 2016; Rienties, Johan, & Jindal-Snape, 2015). This trend towards mixed methods permits commendation, but

MMSNA still misses conceptual clarity. For example, an overarching framework that guides researchers through the many decisions that need to be made in MMSNA research designs—such as when to mix, how to mix, and why to mix—are rarely addressed (Schoonenboom & Froehlich, 2016). Discussions during the ASC are aimed at providing answers to these questions.

Challenge #2: Collecting data and defining boundaries

One pressing issue with SNA is the boundary specification problem (Laumann, Marsden, & Prensky, 1983; Smith, 2013): Who is in the network and who is not? In the ASC, we discuss how to study learning[1] processes happening between groups but also outside groups using SNA (Rienties & Hosein, 2015). An associated question revolves around the consideration of validity criteria during data collection (including, for instance, mixed approaches and text analysis), which, too, will receive attention during the ASC.

Challenge #3: Social network analysis to guide and analyze educational change

Discussing this challenge, we consolidate previous research to answer the question of how educational social networks "should" look like to implement educational change effectively. Moreover, how can we use SNA as an appropriate tool to boost (educational) innovations in practice? These questions are also linked to methodological challenges, such as the analysis of longitudinal data, which represents a challenge in SNA. One instance of this challenge is that in recent years, more and more calls that teachers have to learn to recognize and access their personal teaching network have been voiced. However, the current literature provides little empirical insight into the extent to which teaching networks can actually be strengthened. Here, we may gather input from adjacent fields such as organization studies. For instance, Cross, Thomas, and Light (2009) and Parise (2007) have developed network interventions to support professionals and organizations to act on their networks intentionally. Network interventions are purposeful efforts to use social network data to accelerate behavior change, to improve performance, or diffuse innovations (Valente, 1996). 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). At the ASC, we discuss potential designs of network interventions that increase teachers' network awareness and intentionality.

Challenge #4: Adapting network theories to the field of learning and instruction

A common job description for a teaching position may suggest that a teacher's work is mostly done alone. However, interaction among teachers in the hallways and in the teacher room are crucial learning moments. SNA captures those moments. One associated strand to be developed is the role of social capital theory (Burt, 2000, 2004). Social capital often used in

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[1] SNA offers theories and methods applicable to a wide of questions. Thus, for this proposal, we do not delve into discussing specific concepts, but rather talk about learning (as outcome or process) in a very general sense.

professional setting to explain learning and professional development. Stronger presence of SNA would help strengthen the benefits and limits of social capital theory in the field of learning and instruction.

Challenge #5: Teaching SNA and educating reviewers

In order to further consolidate and embed the application of SNA in the field of learning and instruction, it will be important to address the practical challenge of teaching SNA to new scholars at various levels. For this reason, and based on the identified challenges for this specific field of learning and instruction, we develop a joint course curriculum. Furthermore, we will discuss issues currently faced in the reviewing process when trying to publish SNA research—which, given that not all reviewers understand the method yet, is a crucial step in embedding SNA-research in the current academic debate in the field of learning and instruction.

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