

In conversation with scientific experts: how data coaches and learning networks can support educators' data use

Keywords

Data-based decision-making, data use, teacher professionalization, data coach, professional learning network

Introduction

Over the years, much data have become available for policymakers, teachers, and school leaders. However, the mere fact that these data are available does not lead to improved educational practices. The school staff must be data literate for schools to improve their practice based on available data. Recent research shows that teachers' data literacy is still lacking (Schildkamp & Poortman, 2015). Consequently, building human capacity through professionalization and support is necessary. In this paper, we explore the role of a data coach and learning networks as a way to support school teams regarding the use of data. Since the empirical evidence base on these topics is limited, we investigated the gap through 14 interviews with scientific experts in data use and professionalization of data use.

Theoretical framework

Data-based decision-making

There is an international trend towards more school autonomy in a context where schools are held more accountable for their education (OECD, 2021). This has increased the importance of data-informed choices as a basis for accountability and school development purposes. This is generally labeled as data use or data-based decision-making (DBDM). Schildkamp and Kuiper (2010) define DBDM as "systematically analyzing existing data sources within the school, applying the outcomes of analyses in order to innovate teaching, curricula, and school performance, and, implementing (i.e., genuine improvement actions) and evaluating these innovations" (p.1). The effectiveness of DBDM depends on many factors on different levels, such as data (e.g., quality, access), school (e.g., vision, culture), components of data use (e.g., data collection, data sense-making), policy (e.g., accountability and support) and individual (e.g., knowledge and skills, attitudes) (Schildkamp & Lai, 2013). On the individual level, data literacy is a key competence. It is defined by Mandinach and Gummer (2016) as the ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting all types of data to help determine instructional steps. It requires the combination of knowledge about data, disciplinary knowledge and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn (p. 367). Research shows that teachers' and school leaders' data

literacy is generally poorly developed (Schildkamp & Poortman, 2015). In order to resolve this, building human capacity around data use through professional development and support is necessary (Datnow et al., 2007).

Training and support: The data coach and learning network

Training and support are key factors stimulating DBDM (Schildkamp & Poortman, 2015). Ansyari et al. (2020) conducted a systematic literature review on professional development initiatives (PDI) on DBDM. The findings suggest that human support and collaborative learning play a key role.

Although human support is one of the enabling conditions that promote DBDM, there is little in-depth research on data coaches' essential knowledge, skills, and tasks. Human support such as coaches can help teachers to master interpreting data and bridging the gap between data analysis and instruction (Marsh et al., 2015). In practice, the profile of a data coach takes many forms: researcher, data expert, jack of all trades/master of none, and consultant (Authors, s.d.).

Collaborative learning can consist of professional learning communities or learning networks, where members can engage in reflective dialogue and collaboratively use data to solve educational problems. Researchers such as Poortman et al. (2021) summarized influencing factors on individual, school, and policy levels (e.g., skills and leadership) and enactment process variables (e.g., collaboration and focus on student learning). However, a lot is yet to be uncovered about the underlying processes in a learning network. Little research is available about how learning networks contribute to teacher learning and school development (Prenger et al., 2021).

The present study

Data coaches and learning networks are prevalent in PDI on DBDM, but little in-depth research is available. The present study focuses on further mapping out the state of art in data coaches and learning networks to stimulate DBDM. This is investigated using expert interviews. The following research questions are formulated:

According to international experts,

- (1) What are the necessary tasks, knowledge, and skills of a data coach who supports school teams in DBDM?
- (2) How do learning networks contribute to the support of DBDM, and what are the key features of such networks?

Methods

Expert interviews give fast access to unknown fields and are a quick way to obtain information (Van Audenhove & Donders, 2019). The current study's expert knowledge comes from experience, education, and scholarship. Participants were selected based on their publications on DBDM and expertise in training and supporting collaborative data use. Scientific experts (n=14) from universities in the United States of America, the Netherlands, New Zealand, Canada, Switzerland, the UK, and Belgium, together with more than 1000 academic publications, were invited through e-mail to participate in an online interview. A semi-structured interview protocol was developed based on a literature review on DBDM PDI focused on data coaches and learning networks. The protocol contained questions on the general outline of the (professional development) intervention. Afterward, we focused on the data coach, what the role looks like in practice, and the necessary competencies a data coach should have. Lastly, we focused on learning networks, how they can enhance DBDM, the necessary components, and the perceived outcomes. The duration of the interviews was between 45 and 60 minutes.

The interviews were recorded, transcribed, and coded using NVivo. The codes were drawn up both deductively and inductively. The deductive codes were derived from a literature review and theoretical framework. During the coding process, additional codes were added to the code tree. Thematic analysis was used during the procedure to identify, analyze and report recurring patterns within data (Peel, 2020).

Results

Data coach

When it comes to the skills that data coaches need, there was a broad consensus about the importance of interpersonal skills, such as coaching skills. This is in line with previous research (e.g., Killion & Harrison, 2006 & Marsh et al., 2015), emphasizing the importance of a psychologically safe environment. Experts mentioned several intrapersonal skills such as being motivated, curious, and confident. Also, a data coach must have strong organizational skills and leadership qualities, as mentioned in previous research (Killion & Harrison, 2006).

The knowledge of data coaches is a crucial factor. Having experience working in and with schools, pedagogical knowledge, subject matter knowledge, and data expertise were all mentioned by the experts and were described in previous research by Huguet et al. (2014) and Marsh et al. (2008; 2015).

Finally, all coaches distinguished between data-related tasks and coaching-related tasks for the data coach. Regarding the data-related tasks, modeling data use, acting as a critical friend, and directing attention to the proper evidence were

mentioned as necessary. Building trust, motivating the team, making conflicts negotiable, and monitoring the process were essential coaching tasks.

Concerning the profile of the data, coach experts reported different preferences. For example, some experts preferred 'school-internal' data coaches while others preferred 'external' profiles. Both are reported to have different benefits. School-internal data coaches are believed to be more respected by the school team and can build a more trusting relationship. On the other hand, input or advice is more readily accepted when given by an external person as they are perceived to have a more objective view. Also, experts do not share the same ideas about the appointment of the data coach. Some experts indicated that the data coach needs to have a permanent role within the school. Others indicated that data coaches need to make themselves redundant. The data coach's main task is to guide and support the school team so they can eventually work autonomously.

Learning networks

Concerning essential features of learning networks, experts highlighted features similar to those summarized by Poortman et al. (2022). However, the results also uncovered five tension fields, namely (1) homogeneous vs. heterogeneous grouping, (2) steering vs. giving autonomy, (3) investment vs. revenue, (4) trust vs. disruption and (5) sharing vs. constructing.

The first tension is on how homogeneous or heterogeneous the network should be. Some experts claimed that teachers with the same subject area should be grouped together. Teachers tend to be more motivated when the content is easily transferable to the classroom. Other experts believed that heterogeneous networks are more advantageous, as different subject areas bring different perspectives. The tension between homogeneous and heterogeneous groups also applies to the level of data literacy. While it is helpful when the participant's expertise is complementary, experts explained that literacy could be demotivating when the levels of data literacy are too far apart among members.

The subsequent tension reports a delicate balance between steering the process and giving autonomy. All the experts highlighted the importance of autonomy and participants having ownership of the process but underlined the importance of someone steering the process, as participants often do not have enough knowledge about data use to go through it properly.

Thirdly, the question arises if the time teachers spend in a learning network is worth the revenue. Learning networks require a long-term investment, which is time participants spend away from their classroom and school. However, research has inconclusive results on the impact of learning networks and their effect on student learning.

The fourth tension involves finding a balance between trust and disruption. Some experts claim that developing trust and having a safe environment is a prerequisite for learning in the network. In contrast, other experts underlined the need for disrupting each other's mindsets, beliefs, and actions.

Lastly, experts report tension between sharing knowledge and constructing knowledge. Although most experts brought up collaborative learning as an essential condition, the intensity of the process differed. Some experts see learning networks as successful when participants share their worries and inspire each other with good practices. Other experts feel that learning networks should go beyond this sharing and comparing and instead encourage participants to co-construct new knowledge.

Discussion & conclusions

This study provides more insights into the role of a data coach and learning networks as a form of professionalization for school teams on DBDM. The results can be used when recruiting data coaches for data teams in a school and when designing a learning network. It can be concluded that the role of data coaches encompasses more than only support regarding DBDM. Coaching tasks are equally important and are perhaps a prerequisite for effective data coaching. The context and needs of the school team need to be considered when setting up the profile of a data coach.

The results uncovered important tensions regarding the development of learning networks. School leaders and teacher educators should position themselves concerning these tensions when making decisions about learning networks for data use. More empirical research is necessary to assess whether expert opinions about best practices can be confirmed or not.

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