



Critical features of professional development programs: Comparing content focus and impact of two large-scale programs

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HIGHLIGHTS

- Two large-scale programs similar if characterized according to established frameworks.
- Complex differential effects in the programs' impact on student achievement.
- Designed a framework that detected differences between the programs.
- Differences in content in regard to teachers' knowledge and teachers' practices.
- Differences in delivery when the analysis was split into different content categories.

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ABSTRACT

By comparing two large-scale professional development programs' content and impact on student achievement, we contribute to research on critical features of high quality professional development, especially content focus. Even though the programs are conducted in the same context and are highly similar if characterized according to established research frameworks, our results suggest that they differ in their impact on student achievement. We therefore develop an analytical framework that allow us to characterize the programs' content and delivery in detail. Through this approach, we identify important differences between the programs that provide explanatory value in discussing reasons for their differing impacts.

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1. Introduction

The idea that teachers, similar to most other professionals, are in need of continuous professional development (PD) is widely accepted. For example, in the last PISA (Programme for International Student Assessment) study (OECD, 2016), principals reported that more than half of their teaching staff had participated in at least one PD program in the three months prior to the PISA assessment, and worldwide, foundations and governments are spending large sums on the design and implementation of teacher PD programs (e.g. Swedish Ministry of Education, 2012; U.S. Department of Education, 2014). The impact of PD on student achievement does, however, show large variations, from positive to negative results (Harris & Sass, 2011; Jacob, Hill, & Corey, 2017;

Nilsen & Gustafsson, 2016). It might be possible to explain some of the variations by attending to the design of the programs. During the last several decades, researchers and others have produced several lists of what constitutes high-quality PD (e.g., Darling-Hammond & McLaughlin, 1995; Desimone, 2009; Ingvarson, Meiers, & Beavis, 2005; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). Voices are, however, raised that such lists have not yet provided the kind of clear guidelines needed to steer PD investments (Guskey, 2014; Hill, Beisiegel, & Jacob, 2013; Jacob et al., 2017), and many of the terms used in the literature have been employed and defined in different ways (Sztajn, Campbell, & Yoon, 2009, pp. 209–216). For example, numerous studies (e.g., Desimone, 2009; Garet, Porter, Desimone, Birman, & Yoon, 2001; Ingvarson et al., 2005) contend that a critical feature of high quality PD is *content focus*, which is described as the content of the PD program having a focus on subject matter content, how students learn the content, and how to represent it in a meaningful way (i.e.,

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pedagogical content knowledge [PCK]). The concept of PCK is, however, broad (c.f. Depaepe, Verschaffel, & Kelchtermans, 2013) and a recent review (Kennedy, 2016) shows that PD programs that all focus on a particular subject and how to teach it can differ greatly in terms of their impacts on student achievement. Consequently, just stating that a PD program addresses teachers' PCK in a specific subject is no guarantee for success, and the critical feature content focus must be examined in greater detail.

In this article, we contribute to calls for studies that examine critical features of high-quality PD (Desimone & Garet, 2015), especially in regard to content focus. We do this by analyzing and comparing two large-scale PD programs that are conducted in the same context. The two programs are similar when characterized according to established frameworks for critical features of PD (c.f. Desimone, 2009), but a previous study has pointed to complex differential effects in their impact on student achievement (Lindvall, 2017b).

2. Characterizing PD programs

A PD program can be described in terms of its program theory (Chen, 1990). A program theory is an explication of assumptions for how the program is supposed to attain its desired effects. Such assumptions can be explicit or implicit in the description or delivery of the program. Any PD intervention rests on at least two program theories (Desimone, 2009; Kennedy, 2016; Wayne, Yoon, Zhu, Cronen, & Garet, 2008). The first is the theory of instruction and concerns the actual content of the PD program, i.e., the specific ideas the program offers to teachers and the aspects of practice it intends to develop. During the last several decades, numerous reviews (e.g. Clewell, de Cohen, Campbell, & Perlman, 2005; Kennedy, 1998; Scher & O'Reilly, 2009; Slavin & Lake, 2008) have indicated that PD programs with a combined focus of subject-specific and pedagogical matters seems to be the ones showing the most positive impacts on student achievement. These findings have led various researchers (e.g., Desimone, 2009; Garet et al., 2001; Ingvarson et al., 2005) to argue that one of the most important critical features of effective PD is content focus. Content focus comprises the idea that the PD program focuses on subject matter content, how students learn that content, and how to represent the content in a meaningful way. It can be related to established ideas of teacher knowledge, such as Shulman's (1986) concept of pedagogical content knowledge (PCK). However, the concept of PCK is broad and often divided into several subdomains (c.f. Depaepe et al., 2013). For example, developing a map of (mathematical) content knowledge for teaching, Ball, Thames, and Phelps (2008) differentiated between (a) teachers' subject matter knowledge (SMK), which includes pure mathematical knowledge, specialized mathematical knowledge for teaching, and knowledge about how the mathematical topics in the curriculum are related, and (b) teachers' PCK, which includes knowledge about students' mathematical thinking, knowledge about the content and teaching, and knowledge of the curriculum and other instructional materials. In a recent review Kennedy (2016) characterized 28 PD programs according to their content focus. The 15 programs that were characterized into the category Portraying curricular content, which was the only category that can be related to teachers' PCK, differed largely in their impact on student achievement. Similarly, our own study (Lindvall, 2017b) showed that two PD programs that focus on teachers' PCK and are similar according to other critical features of high-quality PD (c.f. Desimone, 2009) still demonstrate varying impacts on student achievement. Taken together, these arguments indicate that the critical feature of content focus could be broken down to more fully capture differences in PD programs' content.

The second program theory of a PD intervention concerns the

features that will promote change in teachers' knowledge or practice and help them translate the new ideas into their own context, i.e., their methods for facilitating enactment. Several studies (e.g., Darling-Hammond & McLaughlin, 1995; Desimone, 2009; Ingvarson et al., 2005; Penuel et al., 2007) have brought forth the importance that teachers work together with colleagues, that the PD program includes multiple sessions spread over a longer period of time, and that teachers are actively engaged in such activities as planning, enacting, and revising their instructional practices. The research base on what constitutes a powerful learning environment for teachers in a PD program is, however, sparse (Schoenfeld, 2015), and frameworks used to characterize PD programs according to their theories of teacher change are few. An example is Kennedy (2016), who characterized and compared PD programs according to four methods for facilitating enactment: (1) *prescribing* teachers what to do, (2) providing them with multiple *strategies* to choose from including a rationale for why to use them, (3) raising provocative questions for teachers to get new *insights* about their instructional practices, and (4) presenting teachers with a *body of knowledge* without stimulating particular teacher actions. This characterization was proved useful for detecting patterns in which PD programs had impact on student achievement. Kennedy bases her characterization of PD programs on research articles where the programs and their effects are described. She hence uses the article authors' descriptions of the PD programs as a basis for her characterization. This is understandable given the number of studies that were included in the review. Nevertheless, authors' descriptions of programs are not necessarily representative of how teachers experience the same programs. This can be compared to curriculum research, where researchers distinguish between concepts such as formal, intended, written, enacted, and/or learned curriculum (e.g., Porter, 2006; Remillard, 2005; Stein, Remillard, & Smith, 2007). Studies that characterize PD programs according to their actual content might therefore provide additional information.

3. Aim and structure

The overall aim is to contribute to research on critical features of high quality PD, especially concerning content focus. We do this by analyzing and comparing two large-scale PD programs according to their content and methods for facilitating enactment. The two programs are similar if characterized according to critical features of PD identified in the research literature, but they still have shown different impacts on student achievement just after the close of the PD (Lindvall, 2017b). As we are interested in possible sustained effects of the PD programs, we further analyze their impact on student achievement one year after the teachers finished the respective program. Considering the calls for more studies on the impacts of PD programs several years after their implementation (Avalos, 2011; Kennedy, 2016; Sowder, 2007; Wayne et al., 2008), we argue that this analysis is both a method for increasing the reliability of the study and an important result in its own right.

Consequently, this article has two foci, elaborating on the critical feature content focus and examining the impacts of two PD programs one year after their completion. These foci are intertwined. First, the results suggest that the two PD programs differ in terms of their impact on student achievement also the year after their completion. This motivates a closer examination of the programs to try to explain the differences. Second, the two PD programs differ in terms of their content and methods for facilitating enactment. These results may be used to discuss possible explanations for the differences found in the programs' impacts on student achievement. For the article's clarity, we will present the methodology and results for the two foci separately. In the final section, we will

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