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Student-involved data use: Teacher practices and considerations for professional learning

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HIGHLIGHTS

- Beliefs about SIDU appeared to influence how teachers implemented SIDU in their respective classrooms.
- Understandings stemmed from the different ways teachers were introduced to and supported in the practice of SIDU.
- Preparation and hiring entities have important roles to play in how SIDU is introduced, implemented, and sustained.

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ABSTRACT

In student-involved data use (SIDU), students are guided in the tracking and analysis of their own learning data. Research, however, is scarce when it comes to the outcomes of this practice as well as to the knowledge and skills teachers need to productively engage students in this kind of data use. This study adds to the knowledge on SIDU by exploring the ways in which 11 teachers across five districts learned how to involve their students with data. Teachers' descriptions of practice and roots of learning specific to SIDU suggest considerations for the ways in which preparation and hiring entities might support teachers to engage in constructive data use.

1. Introduction

Around the world, educational leaders are occupied with promoting the use of data to support student learning (see Anderson, Leithwood, & Louis, 2012; Earl & Fullan, 2003; Lai & Hsiao, 2014; Lingard & Sellar, 2013; Schildkamp, Karbautzki, Breiter, Marciniak, & Ronka, 2013; and; Schildkamp & Poortman, 2015). Although adults using educational data is commonplace, engaging students in using their own data is a more recent trend. In what we term student-involved data use (SIDU), teachers work to purposefully and directly engage students in the tracking and analysis of their own learning data (Jimerson & Reames, 2015; Kennedy & Datnow, 2011; Marsh, Farrell, & Bertrand, 2016). These practices share aspects with, but move beyond the strategies described in the literature on formative assessment (e.g., Black & Wiliam, 1998; Van der Kleij, Vermeulen, Schildkamp, & Eggen, 2015; Wiliam, 2011a, b). They also move beyond recommendations to clarify learning goals and to engage students in reflective thinking (e.g., Marzano, Pickering, & Pollock, 2001). SIDU could include such strategies, but typically also includes a slate of practices that includes individual student "data binders", quasi-public displays of data, and "data chats" aimed at spurring improvement practices at the student level (Jimerson & Reames, 2015; Marsh et al., 2016).

The thinking behind such practices seems to be that involving students in these ways may lead to improvements in instructional practices while catalyzing student motivation (see Marsh et al., 2016). The field, however, has yet to thoroughly document such practices or to develop consensus about their effects. Thus, while the practice may extend beyond the United States (the context for

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this particular study), little research exists documenting how SIDU unfolds in classrooms across the globe. At present, we do know that teachers across the United States are embracing these practices—either of their own accord or at the behest of school leaders (e.g., Jimerson & Reames, 2015; Kennedy & Datnow, 2011; Marsh et al., 2016). Therefore, it behooves the field to explore how teachers understand and implement these practices, and what forces influence the scope and shape of SIDU. As we learn more about these issues, we are able to consider how preservice programs and school districts might shape learning experiences so that teachers engage in SIDU in ways that are well-aligned with broader evidence on data use, assessment, feedback, and learning.

This study contributes to the evidence base around SIDU by exploring the practices and perspectives of a group of veteran teachers. Our efforts were guided by three broad but intersecting questions:

(1) What learning supports (preservice or post-hire) influenced the ways in which these teachers implemented SIDU?
(2) How did these teachers understand the practice of SIDU?
(3) How did these teachers work to fit SIDU to practice?

2. Teacher capacity for student-involved data use

In this section, we lay out the context for SIDU. We touch on the evidence for data use broadly writ, then outline the components of data literacy considered essential for teacher practice. We connect research on teacher data use to the practice of SIDU, and highlight the gap between the increasingly popular practice and the scant research on supporting teacher learning for involving students with data. We also briefly clarify how SIDU (in its present iteration) diverges from seemingly similar practices.

2.1. Classroom-based data use

Educators have known for some time that day-to-day classroom practice that makes use of formative assessment data, combined with specific, timely, standards-or content-specific feedback, results in improved learning for students (see Black & Wiliam, 1998; Shute, 2008; Wiliam, 2011a,b). The literature also suggests that systematic data use can contribute to a sense of collective responsibility for student achievement (Datnow & Park, 2014); enable inquiry around issues of student equity (Park, Daly, & Guerra, 2013); and—when well-structured and supported—contribute to student achievement gains (Carlson, Borman, & Robinson, 2011; Lai & McNaughton, 2013; Louis et al., 2010).

Research suggests that when implemented well and within a nonthreatening culture of inquiry, certain forms of data use can make a positive difference for student learning (e.g., Anderson et al., 2012; Datnow, Park, & Wohlstetter, 2007; Hamilton et al., 2009; Lai & Schildkamp, 2013). For these promises to be fulfilled, however, teachers and school leaders must be adept at using data to inform instructional decisions. This raises questions related to educator data use capacity and how systems can support improved data use among teachers.

2.2. The challenge of improving teacher data use capacity

In response to the need to support the data-using skills of educators, recent work has focused on building capacity for data use among preservice teachers (e.g., Mandinach, Friedman, & Gummer, 2015) and veteran teachers (e.g., Farley-Ripple & Buttram, 2015; Jimerson & Wayman, 2015; Mandinach, Parton, Gummer, & Anderson, 2015; Wayman & Jimerson, 2014). These studies underscore that to use data well in the service of instruction, teachers need a set of skills and dispositions that help them turn data into action.

Specifically, teachers must be able to formulate questions related to instruction and to situate their data use within a relevant driving purpose (Jimerson & Wayman, 2015; Lai & Schildkamp, 2013). They need to be able to identify (or collect) multiple data relevant to those questions, and to engage in interpretation and sensemaking around their findings (Cho & Wayman, 2014; Jimerson & Wayman, 2015; Lai & Schildkamp, 2013; Mandinach, Parton et al., 2015). Perhaps most important, they must be able to connect data analysis with effective interventions, monitoring processes, and instruction (Jimerson & Wayman, 2015; Mandinach, Parton et al., 2015; Mandinach & Friedman, 2015; Van der Kleij et al., 2015).

2.3. The SIDU-data use intersection

SIDU presents a novel challenge for preparation and professional development systems: Beyond ensuring that teachers themselves have the capacity to engage in data use (from question setting through the identification of action steps), they must also consider whether teachers are able to develop similar capacity in students. To consider what it is educators are preparing students to *do* within SIDU, it is important to clarify what SIDU is and what it is not. As described in the limited literature available, SIDU is a process in which teachers facilitate student use of their own data to set goals, monitor progress toward those goals, and engage in reflection to inform learning (see Jimerson & Reames, 2015; Marsh et al., 2016). Thus, a visitor to a classroom implementing SIDU might see students accessing individual "data binders" in which they track data from a variety of assessments (perhaps with bar charts or scatterplots) and may observe "data walls" on which evidence of student progress (by group or individual, in terms of absolute achievement or in terms of growth) is displayed. "Student-led conferences," wherein students talk classroom visitors or parents through progress checks using their binders as artifacts may also be evident.

Though SIDU shares characteristics with well-researched strategies related to special education and formative assessment, SIDU is not simply an offshoot of these practices. For example, SIDU diverges from the self-tracking/token economies as described in special education literature (see Sugai et al., 2000), as such strategies are designed to help students establish new patterns of behavior, and then be extinguished. Rather, SIDU aligns more with continuous improvement strategies (e.g., Langley, et al., 2009) in that it aims at forming lifelong data using habits.

Neither is SIDU synonymous with the strategies described in the literature on formative assessment (Shute, 2008; Van der Kleij et al., 2015; Wiliam, 2011b). In formative assessment, teachers work with students to establish learning goals and then provide timely and specific feedback to help students make learning adjustments (Wiliam, 2011a). Formative assessment practices also focus on facilitating student reflection (Marzano et al., 2001; Wiliam, 2011a). Yet the practices described in the limited work documenting SIDU do not always align with these characteristics (see Jimerson & Reames, 2015; Marsh et al., 2016). Goals tracked are sometimes vague, aimed at test scores more than specific skills or knowledge (see Jimerson & Reames, 2015; for examples). And, SIDU often involves quasi-public displays of data, the presence of which is expected to motivate students (Marsh et al., 2016). Yet such displays are absent from recommendations in the literature on formative assessment practices (e.g., Black & Wiliam, 1998; Shute, 2008; Wiliam, 2011a,b).

These are important distinctions: If SIDU were synonymous

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