

Studying Implementation Within a Continuous-Improvement Process: What Happens When We Design With Adaptations in Mind?

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INTRODUCTION

Decades-long research on implementation has shown the importance that local context plays in implementing reforms across districts, schools, and classrooms (Anderson et al., 1987; Elmore & McLaughlin, 1983; Honig, 2006; McLaughlin, 1990; Odden, 1991; Purkey & Smith, 1983). New approaches have emerged that take advantage of these lessons; continuous-improvement research, for example, responds to evidence that deep and sustained implementation is likely to occur only when the implementing unit (e.g., a school) is encouraged to modify or *adapt* a program to its context as it is being designed and tested (Bryk, Gomez, & Grunow, 2011; Cohen-Vogel, Tichnor-Wagner, Allen, Harrison, Kainz, Socol, & Wang, 2015; Langley et al., 2009; Penuel, Fishman, Cheng, & Sabelli, 2011).

When adaptations are promoted, the focus of evaluations is not on *implementation fidelity*, where the goal is to ensure that implementers adhere closely to the innovation as prescribed and without modifications. Instead, the focus lies on what some in the educational-research community have come to call *implementation integrity*. In the words of the Carnegie Foundation's Paul LeMahieu (2011):

What we need is less *fidelity of implementation* (do exactly what they say to do) and more *integrity of implementation* (do what matters most and works best while accommodating local needs and circumstances). This idea of integrity in implementation allows for programmatic expression in a manner that remains true to essential empirically warranted ideas while being responsive to varied conditions and contexts.

So what happens when we use a continuous-improvement process to implement educational programs? More specifically, what does implementation look like when adaptation to context is encouraged? Through our work with The National Center on Scaling Up Effective Schools, in this manuscript, to be referred to as the Center,¹ a research and development center established and funded through a five-year grant from the Institute of Education Sciences that embraces the idea of deliberate adaptations to context, we examine this question in detail. Before we do, we describe the roots of continuous-improvement research; its links with other approaches, including a better-known cousin design-based research; and the principles by which it facilitates adaptation (Anderson & Shattuck, 2012; Design-Based Research Collective, 2003; McKenney & Reeves, 2013).

CONTINUOUS-IMPROVEMENT RESEARCH: WHAT IS IT, WHERE DID IT COME FROM, AND WHAT ARE THE PRINCIPLES UPON WHICH IT RELIES TO FACILITATE ADAPTATION?

Continuous-improvement research or *improvement science*, as it is sometimes called has its roots in industry and healthcare (Cohen-Vogel et al., 2015; Bheuyan & Baghel, 2005; Deming, 1993; Shewhart, 1931). The individual most widely identified with it is W. Edwards Deming, a 20th-century statistician who, at the invitation of the U.S. Occupation authorities, began a series of consultations in post-war Japan. He is recognized as the engine behind the revitalization of the Japanese economy following World War II, and much of his success is attributable to well-articulated tools for improvement (Anderson, Rungtusanatham, & Schroeder, 1994). One such tool is the *Plan, Do, Study, Act (PDSA)* framework that Deming and his colleague, Walter Shewhart of Bell Laboratories, are credited with developing (Langley, 2009). PDSA, as will be discussed in more detail later in this section, places short-cycle inquiry at the center of the improvement work. In the context of Japanese workplaces, Deming combined these improvement tools with culturally appropriate philosophies, known in Japan as *kaizen*, that emphasized teamwork as essential to meaningful improvement. These ideas inspired many others, including Toyota's acclaimed Total Quality Control (TQC) system, components of which are still being implemented today (Toyota Motor Corporation, n.d.).

Improvement research moved from industry into healthcare in the late 1980s, when pediatrician Don Berwick founded the Institute for Healthcare Improvement (IHI). Since its inception, IHI has driven improvement research in public health; today, its website contains links to more than 1,000 publications related to improvement of healthcare delivery and outcomes (Shortell, Bennett, & Byck, 1998).

The Carnegie Foundation for the Advancement of Teaching has brought the improvement approach into education, beginning in 2009. (See <https://www.carnegiefoundation.org/>.) Advancing the model in education are the William T. Grant Foundation, the Research & Practice Collaboratory, the Spencer Foundation, the Strategic Education Research Partnership, and new continuous-improvement and research-practice partnership competitions run by the Institute for Education Sciences of the U.S. Department of Education (Cohen-Vogel, Socol, Edwards, & Xing, 2016).

Also smoothing the way for the adoption of continuous-improvement research in education is the use by leading education researchers, in the learning sciences and elsewhere, of *design-based research* and *design-based implementation research* (Collins, Joseph, & Bielaczyc, 2004; Schoenfeld, 2006). These approaches, like continuous-

improvement research, belong to what we have elsewhere called a family of improvement approaches (Cohen-Vogel et al., 2016). Design-based research is a method of inquiry that focuses on understanding the messiness of real-world practice . . . involves flexible design revision [and] multiple dependent variables . . . [and wherein] participants are not subjects assigned to treatments but instead are treated as co-participants in both the design and . . . analysis (Barab & Squire, 2004, p. 3). Design-based implementation research (DBIR) is a research approach that challenges educational researchers and practitioners to transcend traditional research/practice barriers to facilitate the design of educational interventions that are effective, sustainable, and scalable (Fishman, Penuel, Allen, Cheng, & Sabelli, 2013, p. 136). It highlights both role reconfiguration and systemic change in ways that make it more likely that practitioners can *adapt* innovations productively to meet the needs of diverse students (p. 137). In this family of approaches, the need to build an infrastructure of collaboration, a place where members of the field of teaching and its related research disciplines can join a program of research and development productively channeled to improving teaching and learning, features heavily (Donovan, Wigdor, & Snow, 2003, p. 11).

The continuous-improvement model that we use in our work with the Center also relies on a collaborative infrastructure as the first core principle of its work. The Center's District Innovation Design Team, to be discussed in detail in a later section, was built to help promote adaptation to context by disrupt[ing] traditional, bounded roles, taking advantage of native knowledge and expertise, ensuring that practices are aligned with local goals and policy initiatives, and boosting the rate at which change can occur (Cannata, Cohen-Vogel, & Sorum, 2017). By working as equals with researchers on innovation design, practitioners, now co-designers rather than study participants, also plan and run the tests of change, building their capacity for identifying improvements (i.e., targeted outcomes) when they occur. And by working collaboratively in these improvement teams, researchers become smarter about how to target issues that matter to educators and about how to conduct solid research within the constraints of practicing education systems (Means & Harris, 2013, p. 360).

The second principle the Center uses to help promote adaptation relates to the design of the innovation prototype itself, wherein *prototype* refers simply to the first model of change. The principle requires that the prototype reflect the core elements of programs or practices that have been shown to be effective *in the district in which the improvement work is occurring*. That is, a new program or practice must not be dropped in by researchers or reformers (as well-intentioned as they may be) nor borrowed from a neighboring district (Cannata et al., 2017). By relying on practices found in local, high-performing organizations, this model of continuous improvement acknowledges, as Catherine Lewis (2015) did in *Educational Researcher*, that knowledge is not merely in the program to be implemented but also in people and systems (p. 56).

As its third principle, the Center's continuous-improvement process, like the improvement-science model that the Carnegie Foundation and others have used, relies on rapid-cycle testing (other examples include the Center for Learning Technologies in Urban Schools (LeTUS); Middle-School Mathematics and the Institutional Setting of Teaching (MIST); and the Next Generation Preschool Math project.) The purpose of rapid-cycle testing is to generate knowledge about which changes, in which contexts, produce the desired behaviors and, ultimately, outcomes among a particular population of students and the teachers who teach them (Cohen-Vogel et al., 2015; Langley et al., 2009). The Center specifically employs a plan-do-study-act (PDSA) process as a means to conduct rapid-cycle testing. During PDSA cycles, implementers test a change in real-world settings by planning the change, testing it out, studying the results, and acting on what is learned in order to modify the change (Langley et al., 2009). By running multiple tests of small changes (Morris & Hiebert, 2011), the prototype is revised as the work progresses and more and more implementers test the idea (Barab & Squire, 2004). By encouraging both starting small and iterative testing of ideas in the specific environment of interest, the improvement model limits risks associated with early failure and allows the innovation to be gradually modified, or *adapted*, to the uniqueness of the system in which it is being implemented (Langley et al., 2009; Cohen-Vogel et al., 2015).

With the key principles of the Center's continuous-improvement model fully articulated, we move on in the next section to discuss the framework through which we conceptualize implementation, a framework that is tightly bound to lessons from the literature. From there, we describe the methods we used to measure implementation in three high schools with which the Center worked from 2011 to 2015. In the findings sections, we describe the adaptations schools made to the innovation prototype before and during implementation and the contextual factors that influenced implementation integrity at each of the schools. Finally, we discuss the implications of our findings for the ways future researchers might think about the challenges involved in studying implementation with integrity and reflect on the promises and difficulties of using continuous improvement for solving pressing problems of practice.

CONCEPTUAL FRAMEWORK: CONTINUOUS IMPROVEMENT AS A "TOP-AND-BOTTOM" APPROACH TO IMPLEMENTATION

The principles driving continuous-improvement research, intended to facilitate adaptation to context, are rooted in research that has long noted that context matters in implementation (e.g., Berman & McLaughlin, 1976; Coburn, 2003; McLaughlin, 1990; Penuel et al., 2011). Two perspectives on implementation, often referred to as top-down and bottom-up, respectively, place different emphases on the role that context plays. In

this section, we describe these two perspectives as well as the affordances and challenges associated with each, before ultimately conceptualizing continuous-improvement work as a top-and-bottom approach to implementation.

Top-down perspectives perceive implementation as a principal-agent problem: Here, the focus is on whether implementing agents (i.e., school personnel) carry out the directives of the principals (i.e., policymakers) (Rowan & Miller, 2007). This perspective focuses on measuring the extent to which implementers follow program or policy directives with fidelity (Honig, 2006; Odden, 1991; Rowan & Miller, 2007). Those who studied implementation early on found that contextual factors such as local values, implementers will and capacity, available resources, and competing demands shaped, and often impeded, program uptake and implementation fidelity (e.g., Odden, 1991; Pressman & Wildavsky, 1984; Weatherly & Lipsky, 1977). More recent studies of implementation examined how school-level implementers made sense of policy directives; these sense-making studies have described the ways in which local context shapes the implementation of instructional reforms, particularly of instructional reforms targeting reading and math (e.g., Coburn, 2001; Spillane, Reiser, & Reimer, 2002). For example, Coburn (2001) found that how elementary school teachers interpreted and adapted new state reading reforms in California was conditioned by local factors such as interpersonal interactions among professional learning communities, teachers' existing beliefs about reading instruction, the extent to which teachers saw alignment between reform activities and their classrooms, and the ways in which school leadership framed and privileged particular messages about the reading reforms and structured opportunities for teacher collaboration.

Bottom-up implementation perspectives flip traditional roles for policymakers and implementers on their heads by viewing implementers as key decision makers rather than agents of policymakers' decisions (Honig, 2004, 2006; Odden, 1991; Sabatier, 1986). In contrast to top-down approaches that have measured implementation success based on fidelity, bottom-up approaches have emphasized that programs can be most successful when implementers adapt them to fit organizational constraints and needs (Berman & McLaughlin, 1976; Weatherly & Lipsky, 1977). Bottom-up perspectives further track backwards from practice to policy to understand the site-level conditions that facilitate effective practices and use those experiences to guide policy (Honig, 2006, p. 9). An example of bottom-up implementation at the macro, or school, level includes site-based management (Lieberman, 1992). In the 1980s and 1990s, a growth in popularity of site-based management reforms gave schools more autonomy in the design of school-improvement efforts along with governance, fiscal, and curricular decision making (Lieberman, 1992; Wohlstetter & Odden, 1992). Highlighting a micro perspective at the level of classroom instruction and interactions between teachers and students, adaptive teaching (Corno, 2008; Randi & Corno, 2005) suggested that classroom teachers adapt

new instructional strategies based upon the different needs of their individual students and invent immediate solutions to problems that arise within the course of their practice in essence, constantly adjusting their practice in ways that allow them to flexibly meet the demands of the immediate teaching situations they confront (Randi & Corno, 2005, p. 56).

What does the research tell us about the affordances and challenges of these two different perspectives? On the one hand, top-down approaches can translate evidence-based programs to high-fidelity practitioner behavior, resulting in effective outcomes (Fixsen, Blase, Naoom, & Wallace, 2009). Yet research on the implementation of top-down directives has pointed to failures of implementation fidelity and sustainability and ultimately outcomes because local implementing agents modified or mutated policies to respond to their specific environments (McLaughlin, 1990; Spillane et al., 2002; Weick, 1976) or because implementing agents lacked the will and capacity to comply with policy instructions (Honig, 2006; Rowan & Miller, 2007). As Rowan and Miller (2007) explained, this is akin to principal-agent problems discussed in organizational theory, such as principals and agents holding different sets of values which may cause agents to resist implementation, agents being unable to discern or realize the intentions of principals, and principals being unable to sufficiently monitor the actions of agents to provide guidance and ensure implementation fidelity. In addition, mandating that implementers adhere to a strict set of practices was found to lead to token compliance rather than deep changes in practice (Berman & McLaughlin, 1976).

Bottom-up approaches to implementation respond to some of the challenges associated with top-down approaches. For example, increasing implementing agents' decision-making authority can motivate their commitment to the implementation process (Rowan, 1990) and can allow teachers and school leaders to better address local needs (Honig, 2004; Randi & Corno, 2005). Yet, as with top-down implementation, bottom-up perspectives have revealed implementation challenges as well, including the problem of scaling up best practices from isolated islands of excellence (Togneri & Anderson, 2003), a lack of observable changes in teachers' instructional practices (Rowan & Miller, 2007), and ensuring that school-based management structures actually lead to improved student outcomes (Leithwood & Menzies, 1998; Wolhstetter & Odden, 1992).

These lessons point us to a model of implementation that takes advantage of top-down and bottom-up affordances. One model is *mutual adaptation*, wherein a policy or program adapts to fit an institutional setting, and those within an institutional setting adapt their behaviors to reflect the new policy or program (Berman & McLaughlin, 1976). Mutual adaptation stands in contrast to *co-optation*, wherein a project is adapted to the indifference and resistance to change on the part of the project participants but [there is] no change by the participants themselves" and *non-adoption*, wherein there is no adaptation on the part of either the project or setting (Berman & McLaughlin, 1976, p. 352).

Furthermore, research from both top-down and bottom-up perspectives has pointed to similar contextual factors that affect whether mutual adaptation, co-optation, or non-adoption occurs (e.g., Honig, 2006; McLaughlin, 1990). These include capacity-building conditions for example, resources such as money, materials, and time (Durlak & DuPre, 2008; Fixsen et al., 2009; Hatch, 2001; Rorrer, Skrla, & Scheurich, 2008; Stringfield, Datnow, Ross, & Snively, 1998; Wohlstetter, Houston, & Buck, 2015) and ongoing technical support in the form of continuing professional development, on-site coaching, monitoring and responding to implementers' needs, and troubleshooting issues as they arise (Coburn & Russell, 2008; Desimone, Porter, Birman, Garet, & Yoon, 2002; Durlak & DuPre, 2008; Fixsen et al., 2009; Newmann, Smith, Allensworth, & Bryk, 2001; Stringfield et al., 1998).

Additional contextual factors that have been found to affect the extent to which new innovations are mutually adapted include implementers' will (i.e., motivation, enthusiasm, and commitment to carry out an innovation; Coburn, 2003; McLaughlin, 1990); belief that there is a need for the innovation in their particular context and that the proposed changes will lead to desired outcomes (Datnow et al., 2002; Durlak & DuPre, 2008; McLaughlin, 1990); perception that the innovation aligns with existing school, district, and state priorities and policies (Bryk, Gomez, & Grunow, 2010; Coburn, 2003; Hatch, 2001; Honig & Hatch, 2004); and preexisting structures and norms of the workplace, including leadership strength and stability (Coburn, 2001; Datnow, Borman, Stringfield, Overman, & Castellano, 2003; Durlak & DuPre, 2008; Hatch, 2001; Rowan, Correnti, Miller, & Camburn, 2009), channels for collaboration and communication (Durlak & DuPre, 2008; Hatch, 2001; Newmann et al., 2001; Spillane et al., 2002; Wohlstetter et al., 2015), trust (Durlak & DuPre, 2008; Spillane et al., 2002), and a history of implementing other new initiatives at the school (Coburn, 2001; Spillane et al., 2002).

A TOP-AND-BOTTOM CONCEPTUAL MODEL

As the concept of mutual adaptation illuminates, understanding how implementation unfolds either from the top-down or the bottom-up paints an incomplete picture of dynamic interactions among a reform as adopted, the implementers charged with carrying it out, the contexts in which they implement it, and whether implementation ultimately leads to desired outcomes. Scholarship suggests that implementation is not linear, but an iterative *top-and-bottom* process wherein implementers adapt a policy or program to fit their local contexts and policymakers or design teams reshape policy or programs based on the contextual conditions and needs of those charged with implementing them (Datnow, Hubbard, & Mehan, 2002; Elmore, 1985; Lieberman, 1992; McLaughlin, 2006).

Continuous improvement can be considered one such top-and-bottom approach, in that innovations are deliberately planned, tested, and refined within local contexts (Cohen-Vogel et al., 2015). In line with longstanding research (Datnow, 2006; McLaughlin, 1990), continuous-improvement researchers have contended that adaptation to local contexts is key to successful implementation (Bryk, 2009; Cohen-Vogel et al., 2015). According to Bryk, Gomez, and Grunow (2011):

Rather than thinking about a tool, routine, or some other instructional resource as having proven effectiveness, improvement research directs efforts toward understanding how such artifacts can be adaptively integrated with efficacy into varied contexts, for different kinds of students, and for use by diverse faculty (p. 149).

In continuous-improvement processes, then, mutual adaptation occurs by design as an innovation is conceptualized, developed, tested, and implemented.

The continuous-improvement model used by the Center and examined in this study leverages the strengths of both top-down and bottom-up approaches by including features from each. Reflecting top-down approaches that assume implementers should adhere to directives from above, external partners (i.e., university researchers) collected and analyzed data from a year-long case study of high- and low-performing high schools in the district. This work did not involve practitioners as data collectors and analysts; researchers alone used the analysis they had conducted to identify differentiating features between the higher and lower value-added schools. These findings became what the Center referred to as the design challenge that guided the collaborative innovative design process. A second top-down feature of the Center's work was that university researchers worked with the central office administrators in the district to select the schools that would participate in the design and implementation of the innovation. Technically, building-level administrators (but not other building-level educators) had a say in whether they would participate, but given that they were being asked by their superiors, they may have felt that they could not refuse.

Bottom-up features of the Center's continuous-improvement model included the creation of researcher-practitioner partnerships in the form of District Innovation Design Teams and School Innovation Design Teams. The District Innovation Design Teams (DIDTs) were responsible for understanding the design challenge and co-designing the innovation with university researchers and development specialists. These teams met once every two months for two days at a time; pay for substitute teachers was provided by the Center. These teams and the time reserved for their work created spaces for school practitioners including teachers, counselors, assistant principals, and principals to incorporate their local knowledge and their voices into the innovation design. Later, School Innovation Design Teams (SIDTs) were responsible for carrying out iterative PDSA cycles. These PDSA cycles provided opportunities for members of the school-level teams to use information from them to modify the PASL design to meet the needs and constraints of

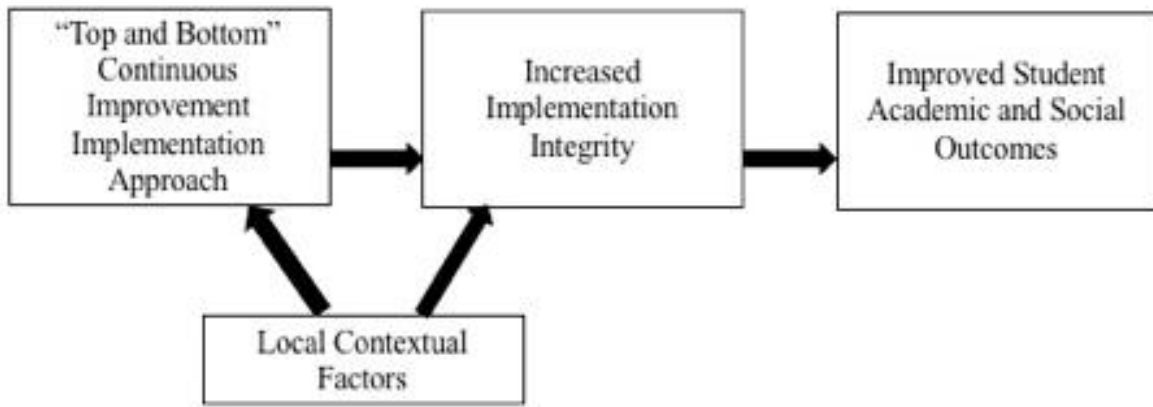
their specific school contexts.

Framing implementation within our continuous-improvement model as a top-and-bottom model allowed us to further specify our research questions. As we stated in the introduction, the purpose of the article is to describe what implementation looks like within a continuous-improvement model that promotes deliberate, planned adaptations. To fulfill this purpose, we analyzed data from a Center project in one large school district in the southeastern United States. The DIDT designed an innovation prototype focused on personalization for academic and social-emotional learning called PASL; the SIDTs used rapid-testing cycles in their school contexts to further develop the prototype and refine it. Thus, this study answers the question: What does PASL implementation integrity look like in three high schools participating in a continuous-improvement process? We further answer: What contextual factors may explain differences in the integrity of PASL implementation across the three schools?

As Figure 1 shows, we hypothesized that the top-and-bottom approach embedded within our continuous-improvement process would lead to higher implementation integrity. Inspired by LeMahieu (2011), we define *implementation integrity* as the extent to which implementers adhere to the core principles of a design *and* the adaptations planned by site-level teams as a response to local needs and constraints. This also includes how frequently the various components of the innovation are implemented, as measured in specific time units daily, weekly, monthly and whether the innovation reaches its intended targets. We expected that contextual factors at the school level would likely explain any differences we might find in the integrity of PASL implementation across the three sites. As previous research showed, these included, for example, available resources; ongoing technical support; implementers' will, belief, and perceptions of policy alignment; and leadership (e.g., Coburn, 2001; Durlak & DuPre, 2008; Fixsen et al., 2009; McLaughlin, 1990; Stringfield et al., 1998).

The last box in Figure 1 shows that we further expected that high levels of implementation integrity would, in turn, lead to improved student academic and social outcomes targeted by the PASL innovation. These included proximal outcomes such as students' awareness of students' academic, social-emotional, and behavioral status; the quality of adult-student relationships; the quality of student support; and students' sense of belonging, as well as distal outcomes such as attendance, dropout rates, and student achievement. (As the research questions in this study focus on understanding implementation processes, examining student outcomes is beyond our scope. See Rutledge, Socol, Harrison, Brown, & Preston, 2016 for outcomes findings).

Figure 1. Conceptual framework



No study to date has examined what happens to implementation in schools participating in a top-and-bottom continuous-improvement process. The present study seeks to fill that gap, exploring implementation integrity when innovations are co-designed with school practitioners and opportunities for adaptation are deliberately built into the process for change. The study may be particularly salient for understanding factors that condition the successful implementation and scaling of social-emotional innovations such as PASL. As Elias, Zins, Graczyk, and Weissberg (2003) pointed out, the implementation and scaling of education reforms that target social-emotional learning (SEL) have often been impeded by top-down factors such as decontextualized, dropped-in programming, poor resource management, and inattention to the will and capacity of those responsible for implementation. This study does not seek to ascertain what balance of top and bottom pressures is needed to successfully implement an innovation within and across schools, nor does it examine the efficacy of the PASL innovation itself. Instead, we examine the implementation process using this particular continuous-improvement approach. In the next section, we elaborate on the specifics of the continuous-improvement process employed in the work, as well as the PASL innovation itself, and describe our processes of sample selection, data collection, and analysis.

METHODS

RESEARCH CONTEXT

We conducted a study of three high schools in a large urban school district in Florida involved in a continuous-improvement process with the Center. The Center's continuous-improvement model contains four phases: (a) research, (b) innovation design and development, (c) implementation, and (d) scaling up. The scope of the present study

focuses on the third phase: implementation.² To provide the context in which implementation occurred, we briefly describe each phase below. (For a detailed description of the model's four phases, see Cohen-Vogel, Cannata, Rutledge, & Socol, 2016).

During the research phase, which took place during the 2010–2011 school year, researchers conducted case studies of higher and lower value-added schools in Broward County Public Schools (BCPS), our partner district, to identify the programs and practices that likely explained differences in schools' performance. BCPS was selected using a value-added achievement model (VAM) to estimate the relative performance of the state's high schools.³ The model measures the impact of educational inputs, such as teachers or schools, on student achievement, holding constant prior test scores and observable student characteristics (Sass, 2012). We used Florida's comprehensive data system to calculate school-level VAMs for several years prior to the beginning of our study in 2010. To identify our partner district, we generated VAM scores for all Florida high schools for the 2004–05 through 2008–09 school years; BCPS was selected because it had a number of both higher- and lower-performing schools with similar demographic profiles, and its leaders agreed to participate. Once BCPS had been selected, researchers worked with district and school leaders to select two higher value-added and two lower value-added schools with similar student demographics⁴ to participate in the research phase.

Researchers engaged in an in-depth comparative case study of the two higher value-added and two lower value-added schools. They made three week-long visits to each of the study schools. Data collection methods included focus groups, interviews, classroom observations, and the collection of school and district artifacts (Rutledge, Cohen-Vogel, & Osborne-Lampkin, 2012). Findings revealed that, in contrast to the lower value-added schools, higher value-added schools personalized student experiences for academic and social-emotional learning (referred to, in short, as PASL). The higher value-added schools recognized the interdependence of academic and social-emotional activities and took an integrated school-wide approach to meeting the academic and social-emotional needs of individual students. Examples of programs and practices supporting PASL included looping, wherein students were assigned to the same administrator and guidance team (and, in some cases, teachers) for more than one year; instructional coaching teams and/or small learning communities that were using data in their daily practice to identify students who were struggling and provide them with additional services, and a pervasive "do the right thing" culture. Creating an innovation around PASL became what we referred to as the design challenge and reflects the Center's core principle that the design of innovation prototypes should reflect practices found to be effective in the district in which improvement work is occurring.

In the innovation design and development phase, the design challenge was tackled by the District Innovation Design Team (DIDT): a team of researchers, district officials, high-

school teachers, school counselors, administrators, and development specialists from The Education Development Center (EDC). DIDT members, including teachers, were selected by district leadership with input from the district coordinator who served as a liaison between district and school personnel. Embodying the principle of relying on authentic researcher-practitioner partnerships, DIDT members worked collaboratively to formulate ideas for an innovation prototype based on the core components of PASL, to be tested in three of the district's high schools (hereafter called innovation schools). Prior to formulating ideas for an innovation prototype, DIDT members collaborated with researchers to determine the types of baseline data needed to understand students' social-emotional needs in the innovation schools and then collected those data themselves. Researchers and practitioners reconvened to analyze the data and determine which components of the innovation prototype they would use.

After the prototype was generated, it was shared with three School Innovation Design Teams (SIDTs), each representing one of the innovation schools and whose membership included teachers, administrators, counselors, and support staff. Responsible for implementing the innovation, the SIDT offered advice for further developing and refining the prototype. For example, one member offered feedback that there was limited district-level support for an academic element of the PASL curriculum. As a result, the suggested curriculum was abandoned for another with greater buy-in and support from the district.

Notably, the SIDTs served as a conduit through which teachers not selected for the DIDT could provide input on the innovation and the continuous-improvement process. The DIDT worked closely with the SIDTs, convening joint quarterly meetings during which the SIDTs presented the results of their most recent PDSA cycles and members of both teams reflected on what was learned, what should be improved, and what should be abandoned. Back in the schools, implementers who were not members of the SIDT had opportunities to provide input as they participated in the PDSA cycles. Furthermore, innovation-school principals attended the DIDT meetings, where they learned about the continuous-improvement model and the results of the PDSA cycles in the schools.

The five core components of the final PASL prototype reflected findings from the research phase, viewing PASL as a bundle of integrated practices that emphasized teacher responsiveness to students' academic and social-emotional needs. They included (a) *educator teams* comprising a core team of PASL teachers, the grade-level assistant principal (AP), and a guidance counselor to whom all 9th-grade students were assigned and around which adults in the school were able to collaborate about shared students; (b) *intentional points of contact*, consisting of Rapid Check-Ins (RCIs) wherein teachers monitored students' academic and social-emotional well-being and conducted problem-solving meetings scheduled with the core team and PASL students when RCIs revealed more serious concerns; (c) *goal-achievement skills*, which included lesson plans on goal-

setting and monitoring created by the development specialists; (d) *intentional use of data* to document PASL activities and collaboratively strategize to meet student needs; and (e) *norms for engagement* through which PASL culture could be built in the school.

During the 2013 2014 school year, the Center moved into the third phase, implementation. During this phase, mutual adaptation was encouraged through the principle of rapid-cycle testing. The SIDT at each school facilitated PDSA cycles around two specific components of the innovation prototype RCIs and goal-achievement lessons with a limited number of teachers and students. During each cycle, SIDT members studied the impact of the innovation prototype by monitoring student tardiness and absences, the number of behavior referrals, and student academic achievement, as measured by quarterly grades. As members of the SIDT learned from each test and refined the innovation, they prepared for and implemented the innovation on a broader scale (i.e., with a larger number of teachers) in the 2014 2015 school year.

The fourth phase, scaling up, is currently underway. In this phase, the components of the PASL innovation are scaling out into five new high-school settings and continue to be sustained in the original three schools. The present study examined the first year (2014 2015) of full-scale implementation of the adapted PASL innovation in the three innovation schools.

INNOVATION SCHOOLS

The researchers and district officials worked together to select innovation schools for initial implementation of PASL. Achievement data from 2008 9 and 2009 10 were used to calculate VAM scores for each of the district s high schools. Researchers calculated VAM scores for all students in each school, as well as for students who qualified for free or reduced-price lunch (FRPL), African American students, Latino/a students, and English-language learners (ELLs). Researchers used the school-level VAM scores to rank order the district s high schools, identifying those that were in the lower half of performance spectrum. Where differences emerged between all-student and subgroup rankings, subgroup rankings took precedence. Charter schools were eliminated, and then six high schools with percentages of minority students, ELLs, and students living in poverty that were at or above the district average were selected.

The research team sent the list of six schools to the district liaison, who discussed it with the area superintendents using the following four questions: (a) Are there any significant state or district interventions or interventions of other types *ongoing* in any of these

schools? (b) Are there any significant interventions *planned* for the start of the 2012 school year in any of these schools? (c) Are there other school characteristics/conditions that may make any of the schools ineligible to participate? (d) *Given the nature of the design challenge*, are there other school characteristics/conditions that should be considered during school selection? District officials used their answers to these questions to invite three of the six schools to implement the innovation. All three that were invited agreed to participate as innovation schools.

The innovation schools Orange Grove, Mariposa, and Flamingo Isles were similar in size and composition. (We assigned a pseudonym to each school to protect confidentiality.) Each enrolled between 2,000 and 3,100 students, and all had student bodies composed predominantly of students of color. Of the three schools, Mariposa had the highest population of African American/Black students, making up between 80 and 90% of the student body; Flamingo Isles had the highest Latino/a enrollment, at 40 to 50%.⁵ Each school qualified for Title I services, with 40% or more of their students qualifying for FRPL. Mariposa had the highest percentage of FRPL students (80-90%), and Flamingo Isles had the lowest (50-60%). Finally, all three schools enrolled similar percentages of ELLs. (See Table 1 for complete demographic information.)

Table 1. Innovation School Demographics (2014-2015)

School	Total enrollment	% Black	% Latino	% FRPL	% ELL	FL School Grade
Orange Grove	2,400-2,700	55-65	10-20	65-75	0-10	CD
Mariposa	2,000-2,300	80-90	5-15	80-90	0-10	CD
Flamingo Isles	2,900-3,200	25-35	40-50	50-60	0-10	AB

Note: Data come from the FLDOE and PK-12 Education Enrollment Reports, Broward County Public Schools. School grades are from the prior school year (2013-2014) to reflect the accountability context in which schools were operating. Data are reported in ranges to protect the anonymity of the schools.

The SIDTs at each innovation school consisted of five to seven members; their composition varied among the sites. Each SIDT included teachers and assistant principals who were identified and recruited by DITD members at their school. The principal at each innovation school was the ultimate authority on who was named to the SIDT, with members being selected primarily based on evidence of their capacity for leadership, either through formal or informal roles. At Orange Grove, the members of the SIDT included a science teacher, a behavioral specialist, a media specialist, the 9th-grade assistant principal, and three other assistant principals. At Mariposa, 12th-grade assistant principal Ms. Edwards led the SIDT; she was supported by the 9th-grade assistant principal, the director of school counseling, and the coordinator of the magnet program. At Flamingo Isles, the SIDT consisted of the 9th-grade assistant principal, Mr. Cooper, and five teachers, including the Health Opportunities through Physical Education (HOPE) department head and social studies, art, technology, and Spanish teachers.

DATA COLLECTION

During the summer prior to the first year of PASL implementation, the research team conducted semistructured interviews with members of each school's SIDT. Participants were asked about the extent to which they felt prepared to implement PASL, challenges they foresaw, and whether they believed that PASL would result in improved student outcomes. During a weeklong field visit the following spring, the research team conducted 53 semistructured interviews with SIDT members, teachers, and administrators; seven focus groups with students (with 4 to 15 students each); and 20 observations of teachers' classrooms across the three innovation schools. (See Table 2 for the number of interactions by school.)

All teachers implementing one or more of the PASL components were recruited for classroom observations and interviews; those granting consent were included in the sample. During the interviews with school faculty and administrators, participants answered questions about how they implemented the core components of PASL, resources and materials they received, the level of support for PASL at their school, and challenges to implementation. PASL students were recruited to participate in one of three focus groups, based on their course-taking patterns: Advanced Placement or honors; on-level, or regular; and remedial. (However, at Orange Grove, only one focus group took place due to scheduling conflicts.) Students were asked about their relationships with teachers and how teachers at their school got to know them, established high expectations, and helped them set and achieve their goals. During classroom observations of teachers' PASL periods, researchers indicated the frequency and described the nature of teachers' check-ins with individual students and references to goal-achievement skills.⁶

After each interview or focus group, researchers completed a reflective post-interaction form (PIF) to capture the extent to which participants' responses supported or refuted our initial implementation framework and to identify concerns with the data-collection process (Miles & Huberman, 1994). At the end of the weeklong field visit, the research team used the PIFs to prepare school-level reflections called school case analysis forms (SCAFs). Researchers used these notes to compile preliminary findings and to refine interview and focus-group protocols for future data collection.

Table 2. Participant Interactions by School

Interaction type	Orange Grove	Mariposa	Flamingo Isles
<i>Summer 2014</i>			
SIDT member interviews	5	6	4
<i>Spring 2015</i>			
Interviews			
Principals	1	1	1
Assistant principals	1	1	1
SIDT members	6	4	5
PASL teachers ^a	8	14	10
Student focus groups	1	3	3
Classroom observations	3	8	9
Total	25	37	33

^aOrange Grove PASL teachers included 3 English/reading, 1 HOPE, and 4 science teachers; all but one teacher taught 9th-grade classes. Mariposa PASL teachers included 6 English/reading, 1 HOPE, 1 science, 1 French, 2 math, 1 social studies, and 2 electives teachers; they taught 9th through 12th grades. Flamingo Isles PASL teachers included 4 English/reading, 1 science, 2 math, 1 social studies, and 2 electives teachers; all teachers taught 9th-grade classes during Period 2.

DATA ANALYSIS

We drew upon our conceptual model to categorically analyze each transcribed audio recording from every interview and focus group (Patton, 2002). Data were coded using the a priori codes of *implementation integrity* and *local conditions* and associated subcodes (see Table 3 for a full list of analytic codes). Initially, each member of the research team coded a common set of interviews to ensure reliability. Researchers met weekly throughout the coding process to identify disconfirming evidence, refine the coding framework, and discuss emerging patterns and themes (Corbin & Strauss, 2008). Classroom observation logs were also analyzed to triangulate emerging findings from the interview data on the nature of implementation. For each school, the number of RCIs and references to goal-achievement skills were tallied by participant; descriptions of RCIs from the observation protocols were categorized as *academic*, *home life*, *extracurriculars*, and *behavior* to capture the extent to which RCIs were conducted with integrity to the PASL principle of attending to students' academic and social-emotional needs.

Researchers used the coded data to write analytic memos for each school (Patton, 2002). These memos identified patterns in the data related to the nature of implementation, implementation supports, and facilitating conditions, and they ensured that findings were grounded in the specific context of each case. Throughout the memo-writing process, researchers continued to meet weekly to discuss key findings, resolve inconsistencies, and create cross-case matrices that compared how PASL was adapted in each school and the local conditions that may have influenced implementation integrity (Corbin & Strauss, 2008).

Table 3. Coding Framework

Code	Description
<i>Implementation integrity</i>	The extent to which the innovation as implemented includes and integrates the five core components of PASL (listed below), emphasizing students academic <i>and</i> social-emotional needs and local adaptations planned by site teams
• Innovation components	Educator teams; intentional points of contact; skills; intentional use of data; norms for engagement; additional adaptations
• Frequency	How often each component of the innovation is delivered
• Reach	Who implements each component of the innovation, and who each component of the innovation targets
<i>Local conditions</i>	Site-level conditions, constraints, and needs that affect the integrity of implementation
• Resources	The extent to which implementers have the material, money, and time to successfully implement the innovation
• Ongoing technical support	The extent to which participants receive professional development and additional supports that help implement the innovation and handle issues as they arise
• Will	The extent to which stakeholders are motivated to assume responsibility for implementation and strive to do what the innovation requires or encourages
• Belief	The extent to which stakeholders feel that the innovation will lead to desired student outcomes

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- Organizational capacity The extent to which school sites have preexisting history and structures (e.g., strong leadership, channels of communication, or history of implementing other innovations) to help carry out the innovation
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- Perception of policy alignment The extent to which participants perceive that the innovation reflects the goals of school, district, and state policies and programs

IMPLEMENTATION INTEGRITY IN THE INNOVATION HIGH SCHOOL

During the summer of 2014, each SIDT created an implementation action plan that delineated how they would adapt the core components of the innovation prototype to their local school contexts for implementation during the 2014 2015 school year. In this section, we present each school as a case, beginning with the adaptations the SIDTs included in their implementation action plans, followed by a description of implementation integrity, and concluding with a cross-case comparison to summarize the nature of implementation across the three schools. Given the top-and-bottom approach to implementation the Center utilized, we expected each school site to adapt the innovation to its school context and at the same time demonstrate implementation integrity. As we will describe, each school did make site-specific adaptations to the PASL components before and during implementation (see Table 4). However, there was variation in the extent to which the schools demonstrated integrity to the PASL design and their own adaptations. We then turn to a comparison of the three schools, examining local contextual factors as a way to understand similarities and differences in implementation integrity at the three school sites.

Table 4. PASL Core Components and Adaptations

PASL core component	Orange Grove adaptations	Mariposa adaptations	Flamingo Isles adaptations
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Educator teams

9th-grade PASL students assigned a PASL teacher	PASL teachers: 9th-grade HOPE, English I, and earth-science teachers	PASL teachers: All Period 1 teachers (Power of Period 1)	PASL teachers: Period 2 9th-grade teachers
Core team of PASL teacher, assistant principal, and guidance counselor who collaborate around PASL students academic and social needs	Collaboration for all 9th-grade staff took place before school during Academic Tuesdays	Cross talks where teachers collaborated around shared students during professional development and informal meetings	Core team comprising 9th-grade assistant principal, guidance counselor, & social worker SIDT and PASL teachers meet monthly during PASL PLCs

Intentional points of contact

Rapid check-ins (RCIs)	Earth-science teachers conducted RCIs with students receiving Ds and Fs No plan for monitoring RCIs	RCIs occurred and documented during Power of Period 1	RCIs occurred and documented during Period 2 Teachers referred students to 9th-grade assistant principal through RCI forms; assistant principal met with students and referred them to mentoring programs Flamingo Friends monitored RCIs
Problem-solving meetings with PASL teacher, core team, and PASL students	Referrals made to behavioral specialist on SIDT	Used RCI to refer students to administration	

Goal-achievement skills

Four lessons on goal setting and goal monitoring created by the development specialists working with the Center	Lessons taught in 9th-grade HOPE classes 9th-grade quarterly assemblies on goal setting	School-created goal-setting activity delivered at beginning of year during Power of Period 1 PASL teachers reviewed goals every 4.5 weeks	Lessons taught during HOPE classes in the first and second quarter All 9th-grade students wrote goals into an app that 9th-grade teachers could access
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Intentional use of data

Documentation of PASL activities	SIDT planned to have PASL binders for all PASL teachers for data from RCIs and goal-setting activities but did not follow through	Power of Period 1 teachers received a PASL binder to collect data on RCIs, goals, and data chats	9th-grade assistant principal sent reports on D and F students out to teachers
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Collaboration around data to strategically meet students academic and social needs	9th-grade teachers held data chats	Data (e.g., D and F reports) used during cross-talk collaborations	Participants already considered Flamingo Isles a data-driven school
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Norms for engagement

Creating a PASL culture in the school	Aligned PASL with programs and activities already taking place in the school	PASL on marquee and incorporated into announcements	Participants already considered Flamingo Isles a school that personalized through existing extracurricular and mentoring programs
	Planned to hold PASL assemblies and incorporate PASL into morning announcements	All staff received PASL T-shirts	
		PASL incorporated into faculty meetings and professional development	

ORANGE GROVE

PASL Adaptations

Orange Grove adapted the five PASL components as separate activities. Regarding *educator teams*, the Orange Grove SIDT identified 9th-grade students taking earth science, English, and HOPE as PASL students and 9th-grade teachers of those subject areas as PASL teachers (see Table 4 for adaptations to the PASL innovation at each school). Three SIDT members would make up the core team that would meet with PASL students when PASL teachers identified students' academic or social-emotional issues during RCIs. PASL teachers would collaborate on Academic Tuesdays for 15 minutes before the beginning of the school day to identify students that they believed were in need of additional attention by the core team. Concerning *intentional points of contact*, the earth-science teachers were responsible for conducting RCIs with students receiving a D or an F on their report cards during the first nine weeks and later. One HOPE teacher would teach the *goal-achievement skills* to all 9th-graders. For *intentional data use*, 9th-grade English teachers would be responsible for data chats (one-on-one conversations between a teacher and student about that student's grades, attendance, and missing assignments); data on PASL students' RCIs and goals would be collected by these teachers in a PASL binder. In addition to these activities, the SIDT sought to promote PASL *norms of engagement* by aligning PASL with college- and career-oriented activities already taking place in the school, incorporating PASL into morning announcements, and holding PASL assemblies.

Integrity

Overall, Orange Grove participants reported that they adhered to many of their local adaptations of PASL, but not all of the core principles of PASL. Four SIDT members and four teachers identified Academic Tuesdays as the time when teachers collaborated by department (English, earth science, and HOPE) around student data and shared ideas and best practices to help students achieve. Yet there was uncertainty among participants about the core educator team: Participants varied in whether they listed SIDT members, the principal, or PASL teachers as the core team. Nearly all SIDT members and teachers interviewed reported that teachers were responsible for only one component of PASL: The 9th-grade earth science teachers conducted RCIs, the 9th-grade HOPE teachers taught the goal-setting lessons, and the 9th-grade English teachers conducted data chats. In line with the implementation action plan, two teachers explicitly reported that RCIs were conducted primarily with D and F students in earth-science teachers' classes. A 9th-grade English teacher described how at the beginning of the school year,

I looked at my kids with attendance issues, I went through and found my kids who were failing at the time, and I was trying to carry those kids up who had the Fs, and those who had the poor attendance, and I labeled them as, you know, PASL kids.

A small number of teachers did suggest that they conducted data chats and RCIs with all students and made comments such as "All of my students are PASL students, and PASL or not, it's just all my kids, but this was unusual. Consistent with Orange Grove's planned adaptations, the goal-achievement lessons targeted all 9th-grade students through HOPE classes. However, one SIDT member reported that "We are implementing the [goal-setting] curriculum through the HOPE classes, but not every single 9th-grader takes HOPE because we don't have enough manpower to have every single 9th-grader in HOPE. Thus, not all 9th-grade students received the bundled set of PASL practices.

Participants also reported variation in the frequency with which the different adapted components of the innovation were implemented. Most teachers reported conducting RCIs with students on a near-daily basis, but rarely filling out RCI documentation forms. However, few RCIs were observed during the classroom observations that took place in the spring, suggesting that RCIs were not a daily occurrence. SIDT members and teachers agreed that data chats generally took place twice a quarter. A 9th-grade English teacher summarized, "We try to do them the week before the interims, four and a half weeks into the nine weeks, and then the week before the final grades. Two teachers did report conducting data chats with students more frequently (i.e., twice a week). A 10th-grade science teacher explained,

I like them to see their grades. As we're sitting here, I'll pull them up. Typically at least twice a week. I can run down the roster in I would say six, seven minutes. Because it's a routine, they already know it.

Academic Tuesdays took place weekly from 7:15 to 7:30 a.m., largely to discuss student performance on assessments, with the majority of SIDT members reporting that Academic Tuesdays geared specifically toward PASL occurred once a month. Although delivery of goal-achievement lessons through HOPE classes occurred at the beginning of the year, participants did not indicate that follow-up or monitoring of the goal-achievement lessons occurred. Taken together, these PASL adaptations had not become integrated as a routine practice.

Although participants at Orange Grove did report implementing PASL with these adaptations, the adaptations themselves did not appear to adhere to the core principle that the components of PASL should be integrated into a coherent program, nor did the adaptations ask teachers to change their practices. Although HOPE teachers and almost all SIDT members reported that HOPE classes taught goal-achievement lessons, non-HOPE teachers did not have a shared understanding that goal-achievement activities were a part of the PASL innovation. Furthermore, that PASL teachers met on Academic Tuesdays by department suggests there was little to no opportunity for implementers to discuss integrating the different components of the innovation or to exchange information about and strategies to use with shared students.

In general, participants also did not report changing their own practices to accommodate PASL. For example, teachers and SIDT members at Orange Grove reported that data chats were instituted prior to the introduction of PASL and constituted a longstanding practice at the school. Two school administrators reported changing the name to *data chats with a heart* as a way to emphasize social-emotional issues. As one explained, *Some of the things that have always been done and that now are being done deliberately and in a very structural manner now have names like the rapid check-in, [and] data chats [have] now turned into data chats with a heart. However, no PASL teacher we interviewed called data chats data chats with a heart.*

Likewise, two SIDT members and five teachers perceived RCIs which they described as shaking students' hands, saying good morning to students, or paying attention to students' mannerisms and countenance as something that they already did as a part of good classroom practice. As one science teacher remarked, *We check in anyways, because it's just something that we do. At my door, [I say] Hi, how are you? If someone is having an issue, obviously I pull them aside. And that's something that we always do anyways. The SIDT media specialist similarly described the referral process to the core team as a routine that already existed in the school: What we've done with any of that information was just what we normally do anyway: email the appropriate personnel to intervene. So that's already in place, but [RCIs] just highlighted it even more.*

Furthermore, as evidence that study participants at Orange Grove did not substantially change their behaviors as a result of the innovation, only a handful of SIDT members and teachers reported documenting RCIs, a new practice introduced by the DIDT. Two SIDT members reported that RCI forms used to document when PASL teachers were conducting RCIs were no longer being collected by the SIDT. An assistant principal on the SIDT explained that it was more important that teachers check in with students a behavior that many teachers reported they already did rather than fill out forms to document them. He stated,

It's not like, Well, gee, I've got to fill this thing out and turn it in. No, we just want [teachers] to be able to say . . . Yeah, over the last two weeks, I've spoken with every one of my kids about a variety of things.

A 9th-grade science teacher concurred, saying that RCIs were something that teachers do on a daily basis without collecting data I think maybe that's why teachers are like, I do that anyways, what do I need to give [administrators] data for it. As these comments suggest, documenting the frequency of RCIs was not adopted among Orange Grove implementers because it did not fit with their perceived local needs. Implementers felt that they conducted RCIs already without having to do any additional paperwork.

In addition to implementing RCIs and data chats as practices already occurring at the school, one administrator, five of six SIDT members, and four teachers identified other programs that the school was already implementing under the PASL umbrella. These programs included a YMCA grant that funded afterschool programs, assemblies for students with low attendance, and a sponsored day when students dressed in professional attire. An assistant principal on the SIDT elaborated: The clubs, the guest speakers, the mentoring programs, you know, all of it's PASL, whether they know it or not. This suggests that co-optation (Berman & McLaughlin, 1976) took place at Orange Grove school personnel adapted the innovation to fit practices already in place at the school more than they adapted their practices to accommodate PASL.

In sum, Orange Grove implemented their PASL adaptations. However, they did so in a way that did not integrate the components for their intended 9th-grade target group or change the routines and structures already present at their school. Thus, adaptations were not mutual but one-sided, wherein changes were made to the PASL design in order to accommodate existing practices.

MARIPOSA

PASL Adaptations

Like Orange Grove, Mariposa adapted all five PASL components. Unlike Orange Grove, Mariposa integrated the PASL components with one another. At Mariposa, the SIDT, led primarily by 12th-grade assistant principal Ms. Edwards, decided to implement PASL schoolwide. In their implementation action plan (illustrated in Table 4), they centered PASL work in the first period of the day, with all first-period teachers grades 9 through 12 being designated PASL teachers and all of their students PASL students. The school called these periods the Power of Period 1. During the Power of Period 1, teachers would conduct and document *intentional points of contact*, in the form of RCIs, and would teach *goal-achievement lessons* during the second week of each quarter, interims, and the end of the quarter. As a form of *intentional data use*, each PASL teacher would receive a PASL binder at the beginning of the school year with materials for the goal-achievement lessons, RCIs, and data chats with students. The SIDT planned to promote *norms of engagement* around the innovation by having PASL teachers promote extracurriculars and communicate college- and career-readiness goals in class, and by discussing PASL during School Advisory Council (SAC) meetings. In addition, the SIDT organized their *educator teams*, with all Power of Period 1 teachers participating in cross talks, in which teachers met during professional-development hours to discuss and share strategies for working with common students.

Integrity

In contrast to Orange Grove, Mariposa participants overwhelmingly reported that the core components of PASL were integrated with one another and implemented in ways that were consistent with the school's adapted PASL design. Adhering to local adaptations, the vast majority of participants reported that RCIs, goal-achievement lessons, intentional use of data, and assigning PASL students to PASL teachers all took place during Power of Period 1. While four of the six SIDT members interviewed reported that every teacher was expected to conduct RCIs and lead goal-setting activities with all of their PASL students, Ms. Edwards estimated that, in reality, 60% of teachers were actually implementing those activities. She said, "More and more people at the very least are compliant with some of the expectations, so we have fewer and fewer refusals to participate."

Regarding intentional points of contact, 10 of the 14 teachers interviewed reported that they checked in with their Power of Period 1 students about academic issues (e.g., assignment completion, test scores, tardiness, absences), social-emotional issues (e.g., personal issues, extracurricular activities, home life), or both; this was corroborated by students in all three focus groups and in classroom observations. Furthermore, nearly

every participant explained that throughout the first semester of the school year, Ms. Edwards required teachers to complete and submit to her a checklist that kept track of the students with whom they conducted RCIs. One English teacher described the documentation: I would just walk around, and then I'd come back and I'd check off my list. And if there was somebody else that I needed to see how they were, then I did that. When these checklists were no longer mandated in the second semester, six teachers shared that they no longer completed checklists, but they continued to check in with students because they now viewed RCIs as automatic or second nature.

As with RCIs, all SIDT members and nine of 14 teachers reported that during the Power of Period 1, PASL teachers completed an SIDT-created goal-setting activity at the beginning of the school year. Ms. Edwards explained:

It was an activity that all the first-period teachers did where they first of all talked about goal setting and what makes a good short-term goal versus long-term goal, how do you identify barriers that will be challenging toward meeting your goal, how are you going to monitor your goal?

Furthermore, six teachers said that they used PASL-specific data such as goal sheets, RCI sheets, and PASL binders to meet the needs of their Period 1 PASL students, suggesting that the PASL activities created new sources of data for teachers. In addition, although by design RCIs and goal-setting activities targeted all teachers' Period 1 students, some school personnel reported that they expanded these components to all of their students. According to a teacher of English for Speakers of Other Languages (ESOL), We started doing the Power of Period 1 last year, and now this year I utilize it with all my students, because I said, Why not? Why don't I do it with my other classes?

Beyond Power of Period 1, administrators and SIDT members described efforts to integrate PASL across the school. The most notable example of this was integrating PASL into allocated teacher professional development time in the form of cross talks, during which nearly every participant reported that most collaboration around PASL students occurred. During small cross talks, two to three teachers conversed about a shared student's grades, attendance, special academic accommodations, or behavior and followed up with supports. In large cross talks of about 25 school personnel, teachers shared what was working with their identified students, what wasn't, additional supports they needed from administrators, successes, and continued challenges. In addition, teachers reported intentionally integrating data (e.g., D and F reports, grades, and attendance) into cross talks, as well as integrating information from cross talks to guide their RCIs with the selected shared students. As a 10th-grade English teacher explained, If a student comes to [me] and she said, Well, I spoke to [another teacher] and we're both concerned. The student goes to [the other teacher] and he says . . . You guys were talking about me. So the

students aware. This was corroborated by a student, who shared, I'll have a conversation with my PASL teacher, and she'll tell me about another teacher, or even student, whoever, counselor that talked about me or said anything. And I'm just like, wow. Unlike RCIs, cross talks were one component of PASL intentionally confined to low-performing students. As a French teacher reported, We'll start talking and documenting and the next time we see each other we'll say, How's it going? You know . . . cross talk about D and F students from the report Ms. Edwards runs.

While the 14 teachers we interviewed largely concurred that they collaborated about shared students via cross talks, they did not consistently describe a PASL core team. Seven teachers considered Ms. Edwards the core team, and five other teachers expressed confusion over the term. Two SIDT members, the 9th-grade assistant principal, and two teachers suggested that teachers did not utilize the process of referring students to a PASL core team because it was perceived as being analogous to the Response to Intervention (RTI) referral process already in place at the school. As in Orange Grove, five teachers and administrators associated other existing programs and practices with PASL, such as Adopt-a-Senior, providing food for their students (for example, one teacher described how her colleague brought in doughnuts on Fridays for her Power of Period 1 students), and celebrating success (e.g., an ice-cream social for honor-roll students). However, unlike in Orange Grove, the vast majority of participants associated PASL with new activities, such as RCIs, goal-setting activities, and cross talks.

As in Orange Grove, however, the different components of PASL were implemented with varying levels of frequency. The majority of participants reported that RCIs occurred with the greatest frequency, followed by cross talks. Two administrators and six teachers reported that they conducted RCIs daily; four other teachers shared that they conducted RCIs regularly (from a few times a week to a few times a month). One administrator and an SIDT member described the process: At the end of each quarter, teachers submitted RCI documentation in their PASL binders to Ms. Edwards. Although three teachers reported that they continued to conduct RCIs regularly, the frequency with which they documented them had decreased over the course of the school year. An art teacher explained, I was doing it more often officially, in the first trimester. I don't take the time to check it off anymore, because that was really more for the school than for me, because I know my kids so well. Cross talks also took place on a regular basis, occurring formally three times during Professional Study Days and, five teachers and one SIDT member reported, often occurring informally through email, phone, or hallway conversations. In contrast, teachers reported implementing lessons and ongoing goal monitoring at the beginning of the school year, but teachers and SIDT members varied in whether they reported monitoring PASL students' goals daily; twice a quarter, during interim-report and report-card distribution; or once or twice during the entire school year.

In sum, reflecting the concept of mutual adaptation (Berman & McLaughlin, 1976), Mariposa implemented school-level PASL adaptations in ways that integrated the various components for teachers and students and resulted in new practices. Yet there were mixed reports from participants regarding the frequency of implementation of certain aspects of the innovation, such as monitoring RCIs and students' goals.

FLAMINGO ISLES

PASL Adaptations

As with Orange Grove and Mariposa, Flamingo Isles SIDT made distinct adaptations to the PASL components (see Table 4). Their implementation action plan indicated that, regarding *educator teams*, all 9th-grade Period 2 teachers were identified as PASL teachers and their Period 2 students as PASL students. PASL teachers would implement *intentional points of contact* by conducting RCIs with students and relaying concerns to members of the core team, which the SIDT identified as the 9th-grade assistant principal, guidance counselor, and social worker. All four HOPE teachers would teach three goal achievement *lessons*; they, along with Period 2 PASL teachers, would model and reinforce the skills. For *norms of engagement*, the SIDT identified several pre-existing activities such as a peer mentoring program and student government as representing PASL ideals and stated that a PASL Professional Learning Community (PLC) meeting during professional study days would be an avenue for communicating PASL updates.

Integrity. At Flamingo Isles, participants reported some changes in practice as a result of implementing PASL, particularly related to RCIs and lessons. However, not all components of the innovation were integrated as a core principle of PASL or implemented as designed in their local school adaptations.

SIDT members and PASL teachers all confirmed that RCIs occurred during 9th-grade teachers' Period 2; all but one participant reported the same process of implementing RCIs. RCIs reached almost the entire 9th-grade class. Participants reported that originally, PASL teachers were supposed to focus RCIs on 9th-grade students who were identified on the D and F report by Mr. Cooper. However, it quickly expanded to include all 9th-grade students in PASL teachers' Period 2 classes. Four teachers also reported that they independently spread personalization to students beyond the designated PASL period. A 9th- and 10th-grade English teacher explained:

I know that we're given a certain target list of students that we are to touch base with on a consistent basis. But, for me, I do that naturally with all of my students. I don't just adhere to that list of students that they target, because that's just who I am. I think that every single one of [my students] needs more attention, needs assistance, whether it be academic, emotional, no matter what it is.

PASL teachers reported conducting routine RCIs with their Period 2 students about academic issues (e.g., grades and quizzes) and social-emotional topics (e.g., home life, relationships, extracurricular activities, spring-break plans, new haircuts), which was confirmed by observation. A 9th- and 10th-grade English teacher explained, It could be their personal interests, hobbies, issues at home It really varies. It could be very sort of superficial to, like, really deep stuff. While every student in two of the three focus groups concurred that at least one teacher in the school would actively check in to ask How are you? they did note that this practice was not ubiquitous across teachers. One student shared, There are some teachers in this school who, yeah, you can talk to, but then there are some that just don't care.

The majority of teachers and SIDT members described the same detailed process for documenting RCIs. Whenever they talked to individual students, teachers checked it off on a document generated by 9th-grade assistant principal Mr. Cooper, which contained the Period 2 roster and a comment box for noting specific student issues that warranted further attention. The RCI document was then returned to Mr. Cooper, who, as reported by two SIDT members and four PASL teachers, absolutely followed through on the referrals marked on the document. He met with tagged students individually and, if needed, referred them to guidance or peer-mentoring programs. To aid Mr. Cooper in monitoring RCIs, the SIDT designated themselves Flamingo Friends, each of whom was assigned five PASL teachers whom they distributed RCI documents to and collected them from, as well as relaying to them information pertaining to PASL. The approximately 30 teachers who taught 9th grade during Period 2 and implemented RCIs were each assigned a Flamingo Friend.

All SIDT members and administrators and four PASL teachers reported that Flamingo Isles also incorporated goal achievement lessons into HOPE classes. About 700 out of 740 9th-graders received lessons and set goals on the app. However, multiple PASL teachers particularly those in the math and science department emphasized that activities did not take place in content-area classes. A science teacher, for example, stated, Do I know what the lessons are in HOPE? No, no clue I don't see any of that stuff leak into my room from the kids I'm not experiencing that in my class. To address this concern, the SIDT attempted to spread goal monitoring across 9th grade by using an app in which 9th-grade students logged their academic and extracurricular goals and to which all 9th-grade teachers had access. While implementation-team members envisioned the app as an additional data point for PASL teachers to use when conducting RCIs with students, only two teachers reported that they used it. Taken together, goal achievement was not integrated into Period 2.

Deeper changes to practices concerning collaboration around shared students also did not seem to occur at Flamingo Isles. As in Orange Grove and Mariposa, there was confusion over who was a part of the PASL core team. Three PASL teachers and three SIDT members

did identify Mr. Cooper as the core person to whom they referred students flagged during RCIs, who in turn referred students to guidance or peer-mentoring programs. Yet Mr. Cooper considered these referrals as what I do in my job if I have struggling students rather than as a new practice. Flamingo Isles did establish a PASL PLC, which was considered by an assistant principal, three SIDT members, and seven teachers to be the formal structure for PASL collaboration. However, six teachers noted that they could not participate because their academic content-area PLC took precedence. For example, one teacher described herself as being on the fringes of PASL because she attended the 10th-grade PLC. Furthermore, rather than collaborate around specific PASL students, nearly all SIDT members and PASL teachers who attended the PLCs reported that PLC content included sharing best practices or debriefing from meetings of the DIDT or SIDT. Over half of participants reported that for teachers who did not attend the PASL PLC, collaboration occurred sporadically, through email or hallway conversations.

Illustrating of the notion of co-optation (Berman & McLaughlin, 1976), multiple participants (including the principal, 9th-grade assistant principal, three SIDT members, and one teacher) also placed existing administrative structures and programs at the school under the umbrella of PASL. For example, three SIDT members described preexisting programs, such as Principal Pals (a peer-counseling program targeting low-achieving students) and student government, as similar to PASL, but [they] didn't come out of PASL. An SIDT member explained, PASL took it full circle and made us, I guess, put more of an effort into those programs. The school did not take many new actions to build a culture of PASL or create new structures for intentionally using data, because many participants reported that the school was already a data-driven school and one that personalized itself for students. One teacher articulated it thus: Flamingo Isles has always been a caring school, and PASL teachers are caring teachers.

As with the other two innovation schools, nearly all participants reported that of all the PASL activities, RCIs occurred with the most frequency. Eleven participants reported that they checked in with students every single day, and over half noted that they filled out the documentation sheet once per quarter. As a 9th-grade algebra teacher explained, I officially write it on the paper when they send us the paper that we have to write down, but pretty much, I talk to the kids when I circulate around the room doing the homework every day. PASL PLCs occurred once a month during professional development days; the frequency of informal collaboration varied across teachers. For example, the SIDT member who taught technology and art reported that he almost every day will see one of the teachers who is a PASL teacher during my planning period and talk a little bit about what's going on, whereas a math teacher and a 9th-grade English teacher both reported that they only communicated with the 9th-grade assistant principal or their Flamingo Friend over email. Goal-achievement lessons also occurred somewhat inconsistently.

Though HOPE teachers were slated to teach the lessons once a quarter, the HOPE teacher on the SIDT admitted to being behind. She did report, however, that she and the students refer to [the lessons] constantly.

In sum, Flamingo Isles implemented PASL in ways that reached their target 9th-grade population and resulted in procedural changes to practice, particularly regarding RCIs. However, the five core components of PASL were not integrated with one another for teachers, though the SIDT made some attempts through PASL PLCs and the goal-setting app.

CROSS-CASE SUMMARY

Overall, we found that each school took the opportunity to make school-specific adaptations to the core components of PASL prior to implementation and continued to make adaptations as a response to local needs and constraints throughout the 2014-2015 school year. The three schools also shared similar experiences of implementing RCIs with more frequency than other aspects of the innovation, such as goal achievement. However, schools differed in implementation integrity, particularly with regard to whether they adhered to the core principle of PASL an integrated set of core components and the extent to which their local adaptations exemplified mutual adaptation or co-optation of the innovation. In the following section, we elaborate on the local contextual factors that may help explain the variation in implementation across the three schools.

UNDERSTANDING VARIATION ACROSS SCHOOLS

Our findings revealed differences in the ways that schools adhered to the principle of PASL, consisting of an integrated set of practices, as well as the extent to which *new* routines and practices were adapted and implemented. As our conceptual model predicted, a combination of local contextual factors, including the availability of resources and ongoing technical support, the will of local implementers, and the perception of policy alignment, helped explain why these differences emerged. In the subsections that follow, we first illustrate the differences and then go on to show how local factors may have conditioned them.

COMPARTMENTALIZATION VERSUS INTEGRATION

Although a core principle of PASL is that it consists of a set of five integrated components, schools differed in their levels of integration. In fact, while one school worked to integrate the components, the other two tended to *compartmentalize* them. Orange Grove and Flamingo Isles compartmentalized, assigning subgroups of teachers to implement different components of the innovation. Moreover, schedules in both schools provided teachers few opportunities to collaborate about students and PASL strategies. Orange Grove delegated 15 minutes a month for PASL-related Academic Tuesdays, and Flamingo Isles PASL PLCs were held at the same time as departmental PLCs, precluding content-area teachers from attending. Flamingo Isles did make some efforts to integrate goal achievement and RCIs through the goal-setting app; however, without incentive to utilize it, few Period 2 teachers did.

In contrast, Mariposa integrated the PASL components by requiring all Power of Period 1 teachers to conduct RCIs, implement goal-setting activities, participate in cross talks with other teachers about shared students, and use data to inform these PASL activities. In addition, Mariposa included PASL cross talks in existing school-wide professional development.

Time

These differences in the level of integration throughout the design and implementation process may be explained by the way each school responded to the limited resource of time. In all three schools, participants reported a lack of time to implement PASL due to annual state testing, changes to the state standards and curriculum, and the 50-minute, seven-period schedule. To address teachers' concerns about time constraints and feeling overwhelmed, Orange Grove and Flamingo Isles SIDTs divided the responsibilities for implementing the different PASL components across departments, as described earlier. A member of the Orange Grove SIDT explained, "The teachers are so overwhelmed right now with limited time, so we broke it [PASL] up so that we gave each department one responsibility versus three." At Flamingo Isles, a math teacher reported, "[The SIDT] explained that a lot of the things will be through HOPE so that way we don't have that extra burden of trying to get that into the curriculum, along with what we already have and we don't have enough time to do."

Further, four teachers from Flamingo Isles and four Orange Grove SIDT members commented that they did not have sufficient time to collaborate around PASL students. For

example, Orange Grove participants reported that the 15-minute block once a month during Academic Tuesdays made collaborating around PASL next to impossible. A reading teacher at Flamingo Isles similarly explained, Unfortunately, we don't have the time to network with each other as teachers. I think that would make a big difference. The expectations, the things that we have to go through in one day, just does not allow for time. This lack of time for collaboration, in addition to the SIDT's belief that teachers lacked time to implement all components of PASL, resulted in a fragmented innovation, rather than the bundle of practices intended by the PASL designers.

On the other hand, Mariposa implemented a relatively integrated innovation amidst concerns about a lack of time. This was because the school administration allocated time within PASL teachers' Period 1 classes to implement the various components of the innovation. In addition, the SIDT coordinator was able to allocate time during professional-study days for other PASL-related activities. Instead of addressing teachers' concerns about time through compartmentalization, she built time into teachers' required activities. She explained, [Teachers] don't have an opportunity for common planning, so I had to build in an opportunity for them to do that. By using existing professional-development hours as an opportunity for teachers to collaborate around PASL students, the Mariposa SIDT used time efficiently without sacrificing the integration of the innovation components.

MUTUAL ADAPTATION VS CO-OPTATION

A second major difference in implementation across schools was the extent to which implementers reported an authentic shift in practice. Schools ran along a continuum between shifting their practice as a result of the PASL innovation and co-opting the innovation to match extant practices. Of the three schools, Mariposa showed the greatest evidence of mutual adaptation. This was seen in the way that nearly every participant articulated the processes for and used shared language about cross talks which signified an authentic change in how teachers collaborated and demonstrated a shared understanding of the routine of interacting with students through RCIs and documenting those interactions.

Participants in Flamingo Isles reported changing surface-level behaviors but not the deep change that goes beyond surface structures or procedures (Coburn, 2003, p. 4). For example, the vast majority of participants interviewed at Flamingo Isles consistently described the procedures for RCI documentation, where lessons took place, and how information about PASL was communicated to them, yet SIDT members and teachers still considered PASL to be a previously established practice at the school. As summarized by an

SIDT member, We've been doing it for a long time. Now it has a name: PASL. The only thing that I'd have to say that's different than what we did before [is that] we're documenting it now.

Orange Grove went the furthest in co-opting the innovation by labeling already-established practices, such as data chats and extracurricular programs, as PASL. In contrast to the other two schools, Orange Grove teachers did not articulate the same understandings of how RCIs, goal-setting, and data use routines were supposed to be implemented, nor did they use a shared language about PASL. Local contextual factors of will, perceptions of alignment between PASL and school policy, and the provision of ongoing technical support and resources by the SIDT help explain these differences.

Will

At Orange Grove and Flamingo Isles, nearly all SIDT members and teachers expressed high will for implementing PASL, because they perceived it as something to which they were already committed and already did as good teaching practice. Therefore, they did not see a need to make deep changes to practice. A member of the Orange Grove SIDT stated, "I've been doing PASL all my teaching life. That's why I know what it looks like. Likewise, in an interview conducted prior to full-scale implementation, a teacher on the Flamingo Isles SIDT stated that the only difference required of the innovation in her practice would be documentation, saying, "I feel like I am a very personable teacher, but this just kind of gave me the documentation to back it up, and to actually record what I was doing and to record the data and the changes. Furthermore, Orange Grove and Flamingo Isles SIDT members reported that they chose implementers who were already subscribed to PASL mentality. One SIDT member at Flamingo Isles, for example, said, "The teachers that we have on [the implementation team], that happen to be aligned with it, are going to be very receptive to it. Before the school year began, an Orange Grove SIDT member also explained that the teachers selected to implement PASL already personalized. A teacher on Orange Grove's SIDT maintained that personalization was an innate, rather than learned, skill:

So I think that we can teach some of this to teachers, but more often than not, I think it's just choosing teachers that are the right fit for it . . . and then understanding that some this just isn't their thing. And so as long as there are enough teachers out there that can connect with the kids, we'll go find them.

This suggests that the SIDT chose PASL teachers based on preexisting will, rather than making concerted efforts to change the practices of teachers who were not already personalizing for students' academic and social needs.

Mariposa, in contrast, did not preselect teachers who already personalized with their students because the school decided to implement PASL schoolwide. As a result, their SIDT contended with issues of implementer will. While the principal, assistant principal, and three teachers believed that at least 70% of teachers supported PASL, three other teachers stated that the majority of teachers implemented PASL because they had to. One English teacher reported, "I think there's a small group of teachers that really believe in it. I think overall the whole school is just doing it because they have to do it. Although this reveals lower buy-in, it also suggests that formal personalization (e.g., documenting RCIs or collaborating around shared students' academic and social needs) may not have been something that teachers would otherwise have done."

Policy Alignment

As a way to build will among teachers and administrators, almost all SIDT members and administrators at Orange Grove and Flamingo Isles presented PASL in a way that aligned it with existing school programs and policies. For example, the Orange Grove 9th-grade assistant principal shared that

I really like [PASL] because . . . I'll see [the PASL school coordinator] take something that we're already doing, and when he dissects it and then aligns it with PASL . . . when you think about it, it's a lot of things we've been doing for a long time.

Multiple Flamingo Isles participants, including the principal, assistant principal, three SIDT members, and one teacher, worked to align PASL with the school's peer-mentoring program, Principal Pals. The HOPE teacher on the SIDT explained, "The Principal Pals program we already have has been extremely successful, so that's what we're going to piggyback on. In this way, the Orange Grove and Flamingo Isles implementation teams did not create the dissonance between old and new programs necessary for substantive, systemic changes to occur (Spillane et al., 2002)."

Ongoing Technical Support

Whereas presenting PASL as analogous to practices and programs already in place at the school may have built will at the expense of shifting practice, ongoing technical support may have helped implementers to change their school practices on the surface level in

Flamingo Isles and more deeply in Mariposa. The SIDT leadership at these two schools provided teachers with structured opportunities for ongoing technical support in the form of training, monitoring, and opening lines of communication.

Eight of 17 Flamingo Isles participants reported that PASL teachers attended a professional-development workshop held at the beginning of the school year that introduced the PASL innovation and explained how to conduct RCIs. While they had no subsequent training, four teachers reported that they received consistent follow-up emails from Mr. Cooper and SIDT members. Furthermore, the Flamingo Isles SIDT members, who attended the monthly PASL PLC, reported that the PLC provided a venue to share new PASL practices that led to small changes in the way teachers interacted with students (e.g., greeting students at the door). The SIDT (as Flamingo Friends) also reported monitoring RCI documentation and explicitly helping PASL teachers implement RCIs by reminding them to turn in their sheets or making themselves available in person or via email if teachers had any issues with implementation. Notably, Flamingo Friends did not report reminding PASL teachers about other components of the innovation (e.g., monitoring PASL student goals on the goal-setting app and discussing specific student needs). This targeted layer of supervision from the SIDT may have encouraged teachers to ensure that they checked in with their students frequently, while at the same time overlooking other aspects of the innovation.

In Mariposa, nearly all teachers pointed to Ms. Edwards as the person who provided expectations and feedback for the type of changes to their practice they were supposed to make. All but one PASL teacher interviewed reported attending a multiple-day training led by Ms. Edwards at the beginning of the school year, during which the SIDT modeled various PASL activities (e.g., RCIs). As one teacher described it, the training was quite thorough. Teachers also reported that Ms. Edwards was the go-to person and very accessible for any questions about PASL. For example, according to another teacher, teachers originally thought that an RCI was saying Hi to students as they walked in the door, but Ms. Edwards clarified that during RCIs teachers were supposed to ask questions and probe students about how they are doing.

Conversely, participants at Orange Grove experienced few opportunities for training and support. While implementation-team members reported holding a professional-development workshop for PASL teachers before the start of the school year, only two teachers mentioned the summer PASL training as being helpful for their own understanding of the program, and even those teachers reported that they did not receive enough information. In addition, time for ongoing training also posed a capacity problem in Orange Grove because the school voted not to have professional-study days that year. One SIDT member expressed this concern before the school year began, saying that because they did not have professional study days,

I just think we have to make sure that we leave enough time to train I just don't know that I

feel like it's efficient or that there's immediate follow-up on it set in place. Sometimes when things aren't set in place in advance, they can be forgotten, so I want to make sure that we follow through with the teachers.

Her fear was realized, as about half of participants interviewed in March complained that Academic Tuesdays did not provide enough time to get the assistance they needed in understanding the changes to practices they should make to successfully implement PASL.

Resources

Finally, Orange Grove differed from Mariposa and Flamingo Isles in the extent to which the SIDT provided resources in the form of materials and documentation, which Mariposa and Flamingo Isles participants reported aided PASL teachers in implementing new routines and practices. Orange Grove SIDT members and teachers reported using few materials to implement PASL. The majority of participants agreed that the forms originally used to track RCIs were too cumbersome and no longer used by teachers or collected by implementation team members, and only one teacher reported using a template to track data chats. In addition, the teacher responsible for lessons reported, I did the goal-setting just on my own, and then when I got the [goal-setting lesson] I was like, Oh, I needed this at the beginning of the year. Where was this stuff?

In contrast, the majority of Mariposa and Flamingo Isles participants reported using materials to document and monitor PASL activities, which in turn helped formalize PASL routines. At Mariposa, 11 participants reported having received a log to record RCIs with students, and six described a goal-setting template for use in their Power of Period 1 class. At Flamingo Isles, all Period 2 teachers reported receiving RCI forms collected by Flamingo Friends once a quarter; also, the teacher who delivered the goal-setting lessons reported receiving materials to structure goal achievement and monitoring at the beginning of the school year. Although a handful of Mariposa and Flamingo Isles teachers complained about the RCI forms being unnecessary, annoying, or additional work, SIDT members and several teachers reported that they reminded them to incorporate RCIs into their daily routines, especially at the beginning of the school year.

SIMILARITIES AMONG SCHOOLS: RCIS AND TARGETS OF THE INNOVATION

Although implementation integrity differed across schools, our findings revealed some school-to-school similarities regarding the frequency with which schools implemented components of the innovation and the discussions that ensued as they considered who would get the innovation.

First, although all five components of the innovation were present in each of the three schools, our data revealed that some aspects of PASL were implemented with more frequency than others. Across all schools, RCIs were implemented with higher frequency than the other four core components; the data indicate that this was due to implementers *will* to implement them. Teachers in all three schools expressed high willingness to implement RCIs because, they said, they considered this kind of interaction to be best practice and something they already did. At Mariposa, an English teacher said that RCIs were part of his/her classroom practice prior to PASL, stating,

I always stand at my door and greet every student, so I know I talk to my students at least once every day. I've always made it a point of that I've made connections with all the kids just through the year, cause that's how I operate.

In another example, an English teacher at Flamingo Isles responsible for implementing RCIs similarly shared that I've always lived by the PASL philosophy I feel like I subscribe to that mentally anyway, so I was like, Well, why wouldn't I do those things?

There were also similarities among schools in their discussions about who the innovation should target. These discussions reflected tension over whether PASL should be directed at all students or just those who were deemed lower-performing. Both Orange Grove and Flamingo Isles started testing RCIs with students earning Ds and Fs; however, a number of teachers in both schools argued that PASL should be implemented with all students. Teacher input at Flamingo Isles resulted in expanding the focus of RCIs to all students by the middle of the year. In Mariposa, the tension was illustrated by the way the innovation was adapted over time; while RCIs were directed toward all students, cross talks focused on students on the D and F list.

Participants suggested that *policy alignment*, on the one hand, and *belief*, on the other, may explain tensions in the discussion about who PASL should target. In terms of policy alignment, participants in all schools reported that the school, district, and state policy context in which PASL was being implemented remained focused on standardized test scores, graduation rates, college- and career-readiness, and, by extension, providing services for lower-performing students. Many teachers saw PASL as complementary to these efforts. At Orange Grove, assistant principal Mr. Jones related the importance of PASL to tangible measures such as graduation rates, stating, If you look at the research that's been done with students in high school and their success rate, the sooner we can get

them connected to something, whether it be a person or a program, the better chance [they have] of being successful and graduating. At Mariposa, three implementation-team members and five teachers reported that PASL supports the school's goal of ensuring that all students graduate college- or career-ready. At Flamingo Isles, the principal described PASL as the best way to move a school, move a child, move a grade level, move a group of kids. Given this focus, it is not surprising that PASL implementers, at least initially, felt a need to focus RCIs and, in the case of Mariposa, cross talks on students at risk of academic failure.

Whereas Florida's standards-based accountability policies may have influenced participants to focus on lower-performing students, the majority of participants including administrators, SIDT members, and teachers at all three schools expressed the belief that PASL was beneficial for all students. Some teachers began implementing PASL with all of their students rather than just their assigned PASL students. As a teacher at Flamingo Isles argued, "Are we servicing only a few? I just didn't agree to the one little group. Everybody has a story, everybody has a need. All my students need personalization." This widespread belief in the power of personalization and PASL likely led some teachers to spread the innovation beyond the initial target group.

DISCUSSION

Building on research that has described models for using continuous improvement in educational settings (Cannata et al., 2017; Cohen-Vogel et al., 2015; Bryk et al., 2011; Park, Hironaka, Carver, & Nordstrum, 2013), our findings provide insights into the implementation integrity of innovations designed and tested in a continuous-improvement process that utilizes a top-and-bottom approach. The ways in which three innovation schools implemented the PASL innovation reveal that, when using this continuous-improvement model, practitioners adapt the innovation to fit their contexts. Each school implemented PASL with adaptations planned and tested by school-level teams. For example, teachers at Orange Grove met once a month on Academic Tuesdays to discuss and monitor PASL implementation; at Mariposa, teachers participated in cross talks to share information and strategies for working with students they had in common; and members of the Flamingo Isles improvement team all worked to help an assistant principal monitor and support RCIs. No school demonstrated *nonimplementation*, wherein PASL was rejected or ignored (Berman & McLaughlin, 1976).

Although PASL was implemented across all three schools, the degree of implementation varied. Whereas Mariposa created new structures (e.g., cross talks) that adhered to a core PASL principle adults collaborating around students they had in common Orange Grove

co-opted PASL by associating it with existing practices and programs at the school (e.g., data chats). And while Orange Grove and Flamingo Isles compartmentalized PASL components in ways that limited their reach, Mariposa integrated the innovation so that nearly all teachers and the targeted students were exposed to all five PASL components. Furthermore, all three schools implemented the innovation's RCI component more frequently than the other components. These findings suggest that using a continuous-improvement model that promotes deliberate, planned adaptations may not by itself solve longstanding challenges to achieving depth of implementation (Coburn, 2003; Elmore, 1996). This is the first study of its kind, however, and more research is clearly warranted.

Consistent with prior implementation studies that predate the use of continuous-improvement processes in education (e.g., Honig, 2006; McLaughlin, 1990; Spillane et al., 2002), local conditions such as availability of resources especially time as well as implementers' will, belief, and perceptions of policy alignment appear to have influenced local adaptations and implementation integrity. Yet a key difference between our findings and those from previous research is that implementers (as represented by the SIDT) had agency to address local conditions in the design and adaptation of the innovation and, at times, appeared to use it. When educators anticipated or ran up against time as an obstacle to implementation, for example, one school built a short power period into the school day. Despite opportunities for adaptation afforded through the PDSA cycles, full practitioner inclusion in the design, and networked improvement teams, however, not all SIDTs expressed their agency in the face of challenging conditions.

To us, these findings add support to the idea that implementation is not linear, but an iterative top-and-bottom process wherein implementers adapt a policy or program to fit their local contexts, and policymakers or design teams reshape the programs based on the contextual conditions and needs of those charged with implementing them. Continuous-improvement processes can anticipate this mutual adaptation and deliberately build opportunities for it to occur as an innovation is designed, tested, and implemented. But opportunities for adaptation alone will not necessarily overcome conditions in the local environment that can thwart implementation. We recommend, therefore, that improvements be made to continuous-improvement processes themselves, improvements aimed at *supporting ongoing adaptation in the face of these hurdles*. For example, DIDTs and SIDTs working in networks could be encouraged to anticipate and plan for the common obstacles of time, will, and competing policies. Perhaps special attention should be given to these obstacles as implementation teams plan their PDSA cycles, for example. Specifically, given the persistence of time, will, and policy alignment in studies of implementation (and their persistence even when adaptations to the innovation are encouraged), PDSA cycles themselves should measure not only changes in practice and student outcomes but also the amount of time the innovation prototype (and its

subsequent adaptations) takes, the will of educators to implement, and perceptions about how the tested innovation aligns with the mission of the school and the bodies that govern it.

LIMITATIONS AND DIRECTIONS FOR FUTURE WORK

The scope of the present study was limited to the first year of full-scale implementation within our four-phase continuous-improvement model. Therefore, we do not answer whether continuous-improvement models that promote deliberate adaptations to context result in sustained implementation over time. Ongoing research by the Center is looking at this question. But because researchers who engage in continuous improvement posit that implementation is sustained when implementers are encouraged and supported in *ongoing* efforts to adapt a program to their (changing) contexts, we expect to find implementation to be most sustained in schools that maintain their SIDTs and continue to participate in the improvement network embodied in the DIDT.

Given that the goal of this study was to understand school-level implementation during the first year of an innovation and not to measure how the innovation was implemented and sustained over time among individual teachers, we did not conduct multiple iterations of classroom observations or interviews. Future work exploring implementation in a continuous-improvement setting might therefore provide fine-grained analysis of implementation at the classroom level. This might include conducting extended observations of teachers, such as daylong observations spread across the school year, as other researchers have done to understand changes in classroom practice in a comprehensive school-reform context (e.g., Wiley, Good, & McCaslin, 2008). Given the resistance of many teachers in two of our three innovation schools to completing PASL-related paperwork, however, we advise caution when asking teachers to fill out logs as a method to measure changes in routine practices over time.

Another limitation is that our analysis focused on implementation integrity in a continuous-improvement context and did not examine in detail how the nature of the innovation itself, Personalization for Academic and Social-emotional Learning, may have influenced implementers' will and belief, along with the availability of resources to help support implementation. Given a growing emphasis in research on social-emotional learning (Weissberg & Cascarino, 2013; Zins & Elias, 2007) and a lack of research on social-emotional programs in high schools (Rutledge, Cohen-Vogel, Osborne-Lampkin, & Roberts, 2015), future research might ask how social-emotional innovations such as PASL are adapted in a policy context that emphasizes standards-based accountability.

We were further limited in that we did not examine the efficacy of this particular continuous-improvement approach as compared to other improvement approaches. Future studies could be designed to shed light on which components of the top-and-bottom implementation approach (e.g., selection and composition of the SIDT or processes for data collection and use) lead to greater implementation integrity and, ultimately, better student outcomes.

CONCLUSION

Overall, the ways in which the three innovation schools in the study implemented PASL suggest that the continuous-improvement process we used provided opportunities for school and district practitioners to adapt innovations to fit a local context. Our findings also reveal, however, that encouraging adaptations is not enough to reliably lead to sustained changes in practice across sites and that old obstacles to implementation will continue to complicate the work. Questions remain for us, and for the field as a whole, regarding how to ensure adaptations are aimed at improvement and not merely to ease the burden on implementers, as well as how to support ongoing adaptation in the face of common implementation hurdles.

Notes

1. The National Center on Scaling Up Effective Schools is a research and development center funded by the Institute of Education Sciences. The Center works with practitioners in two large urban school districts to bring to scale programs and practices that have been shown to be locally effective at improving the outcomes for traditionally underserved populations: minority students, low-income students, and English-language learners. The Center's overall activities are described in more detail in the Methods section.

2. To read about the research phase, see Cohen-Vogel, Rutledge, & Osborne-Lampkin, 2011;; Rutledge et al., 2012. For a full description of the PASL innovation, see Rutledge et al., 2015. More information about Phase 2 can be found in Harrison, Wachen, Brown, & Cohen-Vogel, 2016. The Center is currently in the midst of the scaling-up phase.

3. We chose to use a VAM in order to measure the impact of educational inputs on student achievement while holding constant prior test scores and observable student characteristics. In this way, VAMs help identify schools' contributions to student learning. We recognize that VAM is controversial, particularly when the analysis is conducted at the individual-teacher level and used for high-stakes decisions such as teacher evaluations (Amrein-Beardsley, Collins, Polasky, & Sloat, 2013; Bracey, 2006). We believe we avoided many of the critiques, however, through an analysis that produced VAM estimates of each

school's contribution to student achievement (Grissom, Kalogrides, & Loeb, 2014; Meyer, 1997).

4. To choose the case-study schools, we ranked the high schools in BCPS by their overall VAM scores and by their VAM scores for different subgroups of students (free and reduced-price lunch [FRPL], ELL, Black, Hispanic, White). Separate analyses were conducted in math and reading. We chose two higher- and two lower-performing schools from the ranked list; where there was variation in the overall and subgroup rankings, the subgroup rankings took priority, because the Center was particularly interested in schools making gains with ELLs, low-income students, and students of color. We crosschecked the high and low schools with their graduation rates and found that the higher-performing schools had rates higher than the district average. We confirmed that the schools in the higher- and lower-performing groups had similar enrollments and proportions of students qualifying for FRPL and represented the racial and ethnic diversity of the county. We shared the identified schools with the district, which gave approval to ask principals. Four principals agreed to have their schools participate.

5. Ranges, rather than exact percentages, are provided in order to help protect the confidentiality of study participants.

6. Interview guides and observation protocols are available upon request.

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