J Educ Change (2018) 19:181–204
https://doi.org/10.1007/s10833-017-9313-0

Teachers' agency, efficacy, engagement, and emotional resilience during policy innovation implementation

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Published online: 19 December 2017

Abstract This multiple case study investigated 143 teachers' responses to focus group questions about their experiences with the simultaneous implementation of three disruptive innovations as part of the U.S. Race-to-the-Top (RTTT) agenda: the Common Core Learning Standards, data-driven instruction, and annual professional performance reviews. We asked: How do teachers describe their experiences implementing these three RTTT innovations? How do teachers describe supports for their adaptation to these innovations? And, for each of these questions, and since the study purposefully included schools with above-predicted student outcomes (i.e. odds-beaters) as well as a comparison set of typically performing schools, we inquired: In what ways do odds-beating school teachers' experiences differ from their peers in typically performing schools? Guided by an emergent framework that emphasizes the relationships among teacher agency, engagement, efficacy, and emotional resilience and how these vary in different school contexts, findings suggest that district office innovation leadership and resource allocations, school leadership structures and strategies, and collaborative teams and communities of practice vary and relate to teachers' experiences of innovation implementation. This study advances an empirically-grounded and theoretically rich framework for investigation of teachers' performance adaptation during policy innovation implementation and suggests implications for future research, policy, and practice.

Keywords Common Core State Standards · Teacher evaluation · Data-driven instruction · Teacher agency · Teacher efficacy · Teacher engagement · Teacher emotional resilience · Case study · Policy implementation

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Introduction

America's Race-to-the-Top (RTTT) agenda was a multi-component policy innovation implemented during the second Obama administration in the early 2010s. P12 schools were just one component. Preschools, birth-to-three programs, 4-year colleges and universities, community colleges, and adult career and technical education institutes also were key components. Founded on systems thinking and systems change models, each component was meant to influence and be influenced by the others. In essence, RTTT as a whole was intended to be a reform effort greater than the sum of its parts.

Three essential components of RTTT were ultimately meant to influence school's core technology: the Common Core Learning Standards (CCLS), imperatives for data-driven instruction (DDI), and the annual professional performance reviews (APPR) of teachers and principals. All three innovations as structured were intended to disrupt existing, sub-optimal teaching and learning routines, while stimulating the design-oriented work of developing more suitable and effective ones.

RTTT can be viewed as a bold policy experiment undertaken with a justifiable sense of urgency. Although every level of the education system was targeted and impacted, P12 schools arguably were the centerpiece. What can and should be done to progressively dismantle and redirect the industrial-age school, especially schools that persistently underperform? What can be done to raise economically disadvantaged students' educational aspirations, while ensuring that the schools they attend enable students to achieve those aspirations? Questions like these get to the heart of America's constitutional promise to its most vulnerable citizens. This promise requires that the circumstances surrounding their birth will not determine their life chances. In other words, their demography will not be their destiny. Framed in this way, RTTT is a carrier for three values: equity, opportunity, and excellence.

These three values serve to introduce a consequential transformation. No matter how elaborate the new systems design, and quite apart from the surface appeal of the new language and values used to market and promote the development of cradle-to-career systems, the fact remained that RTTT would be a hollow achievement unless a fundamental shift occurred in what and how teachers teach and what and how students learn. Equity, opportunity, and excellence values enter here because every child needs and deserves two kinds of access: (1) access to important, valuable knowledge and complex skills; and (2) access to a caring, competent teacher who facilitates knowledge mastery and healthy child development. In the present school configuration, millions of students are denied one or both.

As Evans (1996) stated decades ago in her discussions of innovation in school systems, "one of the central lessons we have learned about previous rounds of innovation is that they failed because they didn't get at fundamental, underlying, systemic features of school life: they didn't change the behaviors, norms, and beliefs of practitioners" (p. 5). Evans' call for attention to the "motivational" versus the "technical" aspects of innovation implementation (p. 289) echo this sentiment and numerous other scholars have pursued this concern as well. Rice and Malen (2003),

for example, point to the three costs of reforms (i.e. tasks, social, and psychological) and prompt researchers to query if their costs are avoidable. Enter Honig (2006), who offered a frame for implementation research that includes attention to (1) policies and their goals, targets, and tools, (2) places and their focal organization, context, interdependence, and (3) people and their role as formal or informal policy targets, subgroups, and communities. Picking up on this call for a focus on "systems learning" (2006, p. 226), Honig (2009) asserts that the complexity of policy implementation research requires researchers to "use rich theoretical frameworks and deep qualitative methods…" (p. 339) and she further proposes the import that inquiry into policy implementation "focuses attention not simply on what works but on what works for whom, where, when, and why?" (p. 344). This recommendation segues us to this study's theoretical orientation and methods.

The rationale for new frameworks

RTTT's arguably bold, innovative educational policy agenda posed challenges for researchers and practitioners alike. After all, the three policy innovations (CCLS, DDI, and APPR) were slated for simultaneous implementation, and their respective and collective journeys to classrooms were not scripted or uniform across states. Furthermore, influential community and organizational boundaries needed to be crossed as the three policy innovations journeyed from the state education department policy drawing boards to classrooms at scale. District central office boundaries, school boundaries, and classroom boundaries provided opportunities for local educators to filter, buffer, broker, and modify the three innovations as they were implemented (Durand et al. 2015).

Investigating this complex policy implementation agenda necessitated a multi-faceted, developmental research strategy involving teams of investigators, mixed methods designs, and the search for hybrid conceptual frameworks. The first question in this research program was fundamental to subsequent studies. Did all schools' performances decline (as prior research predicted) (e.g., Christensen et al. 2011) during the initial stages of RTTT implementation, and if not, why?

Significantly, our initial investigations of state education department Common Core assessment data indicated that schools were not uniform in their outcomes. This finding enabled us to parse schools based on CCLS test performance as well as other demographic factors strongly associated with student performance outcomes (e.g. poverty and ethnic and linguistic diversity). Additionally, since schools are categorized by urbanicity, we could further divide schools up into sets of urban, suburban, and rural schools and those with greater and lesser economic disadvantage and ethnic and linguistic diversity to learn how responses to innovations differed in such variable contexts.

Presented with a number of alternative sampling techniques, and mindful that each sample may have yielded different findings, we chose the research strategy of comparing two sets of schools. We named one set "odds-beaters" (OB) because students performed better-than-predicted on the CCLS state assessments taking certain demographic factors into account. We called the other set "typical

performers" (TP) because their students performed as predicted (also taking stock of the same demographic factors) and their primary function was for comparison.

As we proceeded with the study, new research questions continued to arise. All focused on the keynote differences between these odds-beating schools and typical schools. For example, separate analyses focused on differences in the orientations and actions of district central office leaders (Durand et al. 2015); the roles of trust and communication, particularly between district central office leaders and principals (Lawson et al. 2017); distributed instructional leadership strategies implemented by odds-beating principals (Zuckerman et al. 2017); uses and challenges of CCLS-aligned instructional strategies for special needs students (Kurto et al. in press); and the extent to which district office and school leaders insisted on strict implementation fidelity or encouraged and permitted instructional adaptations (Wilcox et al. 2016).

Two inseparable major findings from this line of investigations set the stage for the current analysis. While teachers in typical schools tended to be treated as implementation puppets, (i.e., they were given little or no professional discretion as these disruptive policy innovations were implemented), teachers in the odds-beating schools were largely treated as professionals and received encouragement to adapt these innovations so that they were fit for purpose in their respective classrooms and schools.

Toward a teacher-focused innovation implementation framework

Clearly, there was something special about the odds-beating schools, starting with the innovation implementation orientations and actions of their formally-designated district office leaders and principals and extending to salient organizational characteristics, including the mechanisms for staff, organizational, and policy implementation learning and improvement (Knapp et al. 2014). Beyond customary "great leader" explanations, there clearly was more to this policy innovation implementation story. It necessitated a focus on the special features of teachers as professionals, their approaches to adapting instruction and the social construction of teachers' work in each school and district context with attention to the qualities of their affective or motivational positioning (Eppley 2015; Supovitz and Spillane 2015).

A more elaborate, empirically based and theoretically rich framework was needed to describe and explain this important set of findings in these odds-beating schools as Honig (2009) had called for. Drawing on a diverse literature, the research team developed a four-component conceptual framework for purposes of the present study. This framework joins teacher agency, engagement, efficacy, and emotional resilience. Each of these phenomena can be framed and researched in two related ways: (1) as individual properties and (2) as collective features of communities of practice and teacher teams. Evidenced in people, these four phenomena influence and are influenced by organizational forces and factors (see Fig. 1).

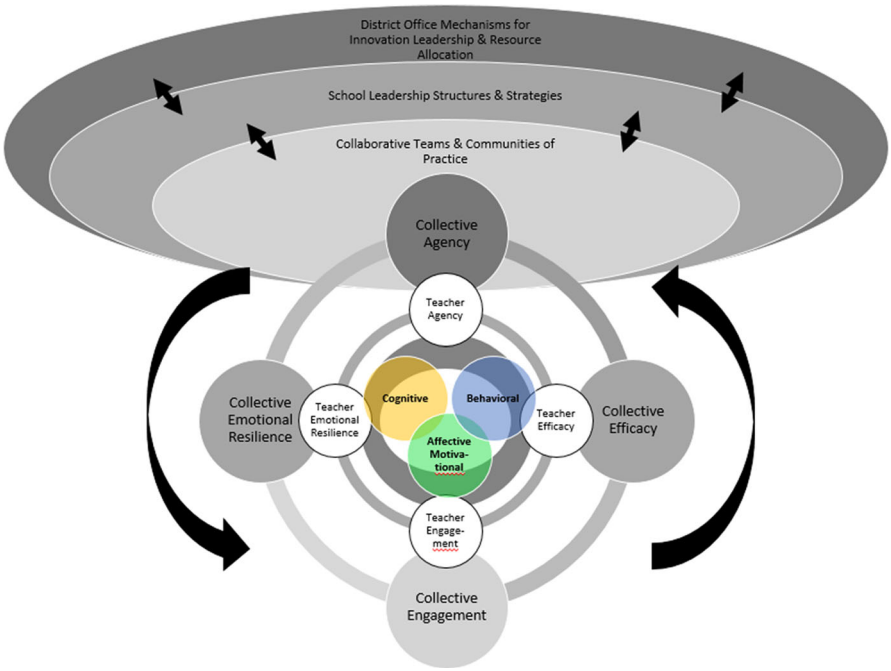

Fig. 1 Teacher-focused innovation implementation in context

Teachers' individual and collective agency

The first component of this framework highlights agency. *Agency* refers to the perception of or intention to exert choice and voice. In other words, agency refers to an important combination of people's "sense of intentionality and their perceived possibilities and opportunities" (Priestley et al. 2016, p. 3). When agency is conceptualized in this manner, it does not designate observable actions, which are more accurately characterized and studied as engagement as we discuss next.

Teacher agency is connected to the superordinate concept of human agency, which is a central building block in social theory. In this latter context, human agency is paired with the concept of social structure (e.g., Giddens 1979). Analyses of the relationship between human agency and social structure proceed with interest in two related socialization dynamics: (1) the extent to which organizational and societal power differentials, authority structures and rule systems deny opportunities for choice and voice, i.e., teachers are stripped of their agency; and (2) the extent to which agentic individuals and groups believe that they are able to exercise choice and voice, albeit oftentimes under constraints.

Theory and research on teachers' agency follows suit. Their individual and collective agency varies as a function of school, community, and policy contexts. These contexts, alternatively framed and named as social ecologies (Bronfenbrenner 1996), have the potential to facilitate, constrain, or prohibit opportunities for, and expressions of, teachers' agency. For example, these contexts influence teachers'

role orientations, designated responsibilities, daily work routines, accountability mechanisms, and career structures (Priestley et al. 2016).

While teacher agency is of interest in the here-and-now, it has a past and a future dimension as well (Priestley et al. 2016). This historical-developmental perspective is particularly salient for studies of veteran teachers with employment tenures in two kinds of schools: (1) ones with a track record of proactive innovation adoption and implementation; and (2) ones with compliance-oriented reform histories. Disruptive innovations such as the CCLS, APPR, and DDI provide timely, observable opportunities to examine agency from this perspective. After all, innovations-as-reforms influence teachers' agency, and teachers' agency influences what gets implemented, when and where, how, and for how long (Cooper et al. 2016).

School and district central office leaders' innovation implementation strategies, past and present, are especially consequential for teacher agency (Lawson et al. 2017; Supovitz and Spillane 2015). Grounded in the extent to which the leaders view and treat teachers as professionals, all such agency-related facilitators are influenced by leaders' preferred innovation implementation strategies, the trust-communication connections (Durand et al. 2015; Lawson et al. 2017), and the extent to which teachers' work is facilitated by collaborative work cultures before and during innovation implementation (Priestley et al. 2016).

For example, top-down, scripted, and compliance-oriented implementation strategies and protocols, which treat teachers as implementation puppets, can be expected to diminish and impede agency. In contrast, strategies and protocols grounded in teacher professionalism, especially ones that emphasize and permit adaptive integration during innovation implementation, can be expected to reflect and strengthen teachers' agency. Here, teachers enjoy professional discretion regarding the pace of implementation as well as whether and how to tailor an innovation to fit their preferred practices and their students' unique needs.

To summarize: agency results from the *interplay* of individual and group/collective perceptions and intentions and the conditions provided by the school, district context, and surrounding community. It is, furthermore historical and developmental. Researchers exploring teacher agency thus must examine the cultures, structures, and relationships that shape the particular 'ecologies' within which teachers work, including district and school organizational climates, routines, and rituals (Lawson et al. 2017; Koschmann and McDonald 2015).

Teachers' individual and collective engagement

Once teacher agency is conceived and operationally defined in the above way—with a distinctive emphasis on perceptions and intentions that is conceptually divorced from action, attention shifts to what can be called "agency-in-action". The concept of teacher engagement is fit for this purpose.

Teacher *engagement* can be framed as a solo action and one that involves "an affective-cognitive state, not targeted at any particular work event or task" (Klassen et al. 2013, p. 35), however, engagement also can be seen as a collective phenomenon. For example, collective teacher engagement is evident when teams and professional learning communities are accompanied by collaborative work

cultures (Lawson et al. 2017; Stosich 2016). Collective teacher engagement is especially likely to be evident in schools characterized by organizational structures and routines that prevent teacher isolation (Elmore 2004) and prioritize both top-down and bottom-up mechanisms for student, staff, and organizational learning (Wilcox et al. 2017; Knapp et al. 2014).

The research reported here provides an alternative, complementary framework for the dominant conception of teachers' engagement as solo acts or collective ones. The dominant approach typically focuses on teachers' relations-as-engagement with students. This line of research indicates that teachers' engagement is influenced by the potent combination of their individual and shared beliefs, perceptions, and attributions regarding students (e.g., Cooper et al. 2016) and especially with their direct experiences with sub-populations in their classrooms (Wilcox et al. 2017; Darling-Hammond 2010; Reis et al. 2011).

The current study's second conception of teacher engagement, like the dominant one, views engagement as both an individual and a collective phenomenon. However, captured by performance adaptation theory and research (Baard et al. 2013), this second conception of engagement goes further. It focuses on how front-line professionals such as teachers, who are charged with the implementation innovations, cognitively, affectively, and behaviorally engage—phenomena of interest in this study's framework. Through this lens, all of the following can be seen as part of how engagement is enacted via (1) cognitive mechanisms such as attention, learning, knowledge and its organization, decision-making/problem-solving, and creativity; (2) affective mechanisms such as goal orientation states (i.e., mastery, prove, avoid), self-efficacy, and anxiety; and (3) behavioral mechanisms such as acts driven by knowledge, skills, and abilities (i.e. instructional adaptations, curricular revision) (Baard et al. 2013, p. 91). Eyeing future research needs for hybrid conceptual frameworks taking into account ecological factors, forces, and actors, Baard et al. (2013) offer the following recommendation:

> There is a compelling need to explicitly situate the conceptualization of adaptation to specify (a) what it is to which an entity is adapting (i.e., key environment/task drivers), (b) what level(s) of the organizational system(s) are implicated (i.e., individual, team, unit, organization, transorganizational), and (c) importantly, what mechanisms underlie that particular form of adaptation at that level or at multiple levels (p. 89).

These needs were instrumental in the current research on teachers in odds-beating and typical schools and implicated the import of yet two other concepts in our framework: self- and collective efficacy.

Teacher self- and collective efficacy

Self-efficacy is a concept rooted in two theoretical traditions (Zee and Koomen 2016): locus of control theory (Rotter 1966) and social cognitive theory (Bandura 1977). For purposes of the current study, a teacher's self-efficacy is founded on prior experiences, personal-professional competency and performance beliefs. *Efficacy* is manifested in a teacher's behavioral and task persistence in classroom

environments and school contexts. Self-efficacy is especially salient when teachers persist in the face of short-term adversity, disappointing results, and the formidable challenges of adapting personal and team performances in response to innovation requirements and demands. Alongside a teacher's self-efficacy is the group or team property known as collective efficacy (Goddard et al. 2000). Teacher collective efficacy impacts and is impacted by important organizational factors (e.g., climate, culture, routines, decision-making structures and processes) and key actors (e.g., principals, district officers, instructional coaches (Zee and Koomen 2016).

A growing body of research documents the importance of both teacher self-efficacy and teacher collective efficacy. Initially conceived as an omnibus trait, today's researchers assume that efficacy may vary as a function of different types of tasks, students, circumstances in classrooms, and school and district environments (Zee and Koomen 2016). Where school and district environments are concerned, researchers have documented the importance of recognitions and rewards, technical assistance, social supports, and professional development resources as well as a complex interplay among the forces, factors, and actors in and across organizational, community, and institutional contexts (Derrington and Angelle 2013). Where teacher teams are concerned, Sun et al. (2016) found positive spillover effects from effective teachers to colleagues facing challenges. These variable affordances act as facilitators, constraints, and barriers to self- and collective efficacy.

An apparent gap in the literature concerns self-efficacy and collective efficacy when innovation adoption and implementation are underway and especially when innovations such as the CCLS, APPR, and DDI are designed to significantly change teachers' performances. Like any disruptive innovation, it could be expected to stimulate emotional/affective responses, which provides a segue to the next concept of interest in our framework: emotional resilience.

Emotional resilience

Especially in large, impersonal school bureaucracies (Lipsky 1980), the emotional part of teaching, like teacher agency, efficacy, and engagement, has remained in the shadows of technical imperatives and mechanisms for behavioral conformity. The simultaneous implementation of several disruptive policy innovations provides a timely opportunity to illuminate the importance of the emotional aspects of teaching as innovations are implemented. After all, many disruptive innovations require teachers to give up their pet routines and adapt their work orientations and performances in major ways. Especially in the case of veteran teachers, these required changes may evoke feelings of emotional grief and loss, including intense ones associated with death and dying (Heifetz et al. 2009).

A second perspective is provided via interdisciplinary studies of leadership dynamics associated with innovation implementation strategies. For example, when teachers are viewed and treated as implementation puppets, and they are robbed of their professional discretion to make informed judgments, the effects are not merely technical and procedural. The conjoint processes of de-professionalization and depersonalization have measurable emotional impacts. Emotional impacts include

apathy, psychological withdrawal, burnout, and depression, perhaps diminished commitments to students, the school, and the community (Zee and Koomen 2016).

As with agency, efficacy, and engagement, emotional resilience also can be framed as both an individual and a collective characteristic. For purposes of the current study, collective emotional resilience is adapted from Day and Gu's (2013) concept of relational resilience (who offered the "relational" adjective to emphasize that it is a collective property). These scholars emphasize in their conceptualizations of relational resilience teachers' reactions to "a range of personal, relational, and organizational settings" (p. 3) and assert that "…*resilience* is not a fixed psychological trait but a dynamic capacity which can be influenced by socio-cultural factors, and capacity for resilience may grow or become eroded by these" (p. xvi): "It involves more than "bouncing back" quickly and effectively from challenges and difficulties. It involves the capacity to maintain equilibrium (including life-work relations), together with a strong sense of commitment and agency" (p. 7). Through this lens collective emotional resilience would be expected to be reinforced by collaborative work cultures, communities of practice, and teams that provide social supports.

With this framework which joins teacher agency, engagement, efficacy, and emotional resilience, we introduce the following research questions: How do teachers describe their experiences implementing three RTTT innovations (CCLS, DDI, and APPR)? How do teachers describe supports for their adaptation to these innovations? And, for each of these questions, we inquired: In what ways do odds-beating school teachers' experiences differ from their peers in typically performing schools with regard to agency, engagement, efficacy, and emotional resilience?

Method

This multiple case study investigated elementary and middle schools in New York (NY) state (one of several states funded by the federal government to implement RTTT innovations) whose students exceeded (i.e. odds-beating) or achieved predicted (i.e. typical) performance on CCLS assessments in the 2012–2013 school year. These schools also enjoyed a history of exceeding predicted performance prior to the RTTT innovation implementation. Significantly, 2013 was the first year of the implementation of the CCLS assessments in NY, making the timing of data collection in the 2013–2014 school year particularly appropriate for this inquiry.

Two methods were used in the first phase of identifying the sample: regression analysis and *t* tests (Levine et al. 2013). Regression analysis allows for the comparison between expected and real student performance on CCLS assessments taking into account important demographic variables in schools such as the economic disadvantage and linguistic backgrounds of students served. The regression analysis results in a Z score representing each school's standardized distance from the mean. In addition *t* tests (three each for ELA and mathematics in grades 3–5 and 6–8) were used to predict scores as the hypothesized values for each set of comparisons (see further details regarding methods and procedures in Wilcox et al. 2014) (Table 1).

Table 1 School characteristics

Odds-beating schools	Grade span	% Economic disadvantage	% White	% ELL	Average z residual range[c]	*t* tests
Rural						
Eagle Bluff ES[a]	K-6	50	100	0	1.00–1.49	3.0
Spring Creek ES[b]	K-6	*55*	90	0	1.50–1.99	3.0
Ruby MS	6–8	50	95	0	< 2.00	3.0
Roaring Gap MS	6–8	40	65	0	1.50–1.99	3.0
Suburban						
Starling Springs ES	K-5	30	50	*15*	< 2.00	3.0
Yellow Valley ES	K-5	*80*	65	5	1.50–1.99	2.0
Hutch Hill MS	6–8	20	90	0	< 1.00	1.0
Laribee MS	5–8	5	85	0	< 2.00	2.0
Large Suburban/Urban						
Bay City ES	K-6	*100*	*40*	0	1.50–1.99	3.0
Goliad ES	K-6	*60*	*20*	*15*	1.00–1.49	3.0
Julesberg MS	6–8	35	50	5	1.00–1.50	1.0
Sage City MS	6–8	*60*	*35*	*15*	< 1.00	1.0
Typically performing schools						
Rural						
Wolf Creek ES	K-6	35	95	0	− 0.20 to 0.00	0
Tarelton MS	6–8	40	100	0	0.00–0.20	0
Suburban						
Sun Hollow ES	K-6	40	90	0	0.00–0.20	0
Locus Glen MS	6–8	30	90	0	− 0.20 to 0.00	0
Large Suburban/Urban						
Paige City ES	K-5	*55*	80	5	0.00–0.20	0
Silver City MS	6–8	*55*	60	0	0.00–0.20	0
Average for New York State						
NA	50	48	8	NA	NA	

[a]Ranges and rounding of numerical data are provided to ensure anonymity

[b]All school and district names are pseudonyms

[c]Schools shown in italics are those with greater poverty, ethnic, and or linguistic diversity than the state average. Percentages for each subgroup are not provided as to minimize the possibility of deductive disclosure

The scope and budget of the research project allowed for up to 18 schools to be studied, which based on the lead authors' experience with designing and conducting multiple case studies as well as recommended case study methods (Wilcox 2005; Wilcox and Angelis 2007; Wilcox 2008, 2009; Wilcox and Angelis 2011; Wilcox et al. 2013; Yin 2014) ensured sufficient data to respond to the research questions. Since one of the study aims was to identify promising practices toward innovation implementation, odds-beating schools were favored over typical performing

schools. The sample thus included 12 (six elementary and six middle) odds-beating schools with z scores close to or greater than one above the mean (statistically significant) and at least one of six *t* tests met. The six other schools (three elementary and three middle) had achieved expected performance with z scores clustering near the mean and who met no *t* tests[1]: these latter schools were called "typically performing" and we studied them for comparison purposes.[2]

In alignment with a social ecological orientation that takes into account what are deemed as important contextual factors in the study of teaching, learning, organizational design, and innovation implementation, the study design called for equal representation of rural, suburban, and urban schools and a mixture of schools with greater and lesser socioeconomic, ethnic, and linguistic diversity. The main assumption was that practices may differ by school and community context. This design enabled different kinds of comparisons: odds beaters versus typical performers, and each by characteristics such as urbanicity and student diversity.

Overall, the sample of 18 schools tended to be more economically disadvantaged, less white, and have lower per-pupil spending on average than elementary and middle schools across the state (thus—odds-beating). This sample was purposive insofar as the odds-beating schools were chosen because their several challenges did not prevent them from exceeding predicted performance, including short-term performance declines, during disruptive innovation implementation.

Data sources

This analysis is based on 44 focus groups with 143 elementary and middle school classroom teachers, special education teachers, English second language (ESL) teachers, and teaching aides. The questions for the focus group semi-structured protocol were shaped through both literature reviews and theoretical framing in social ecological theory (Bronfenbrenner 1996) as we were interested in how teachers were impacted and impacted the surrounding school and district systems. Several questions in the protocol were focused on their responses to the three RTTT innovations.

In each of the 18 schools participating in the study teachers volunteered to participate in a 1 h focus group. These focus groups were facilitated by faculty researchers who were certified by the university's Institutional Review Board. Field teams of three to four members conducted 2-day long site visits at each school and their district office. All field teams received guidance from team leaders who had normed practices through modeling in the field in order to facilitate the standardization of data collection procedures on subsequent site visits (Creswell 2015).

Typically, teachers were assembled in a conference room in the school. Researchers began with informed consent procedures to clarify any questions about

[1] Once assessment data were made available for the 2013–2014 school year, we analyzed performance data again and these schools were consistent in their above-predicted and predicted performance.

[2] Lower-performing schools were not sampled as they were undergoing a variety of state-led reviews and interventions that would make participation in research an undue burden.

the study, ensure confidentiality of the data, and offer safeguards for teachers' and the school's anonymity. As many as eight participants participated in each focus group. Responses were transcribed by university staff.

Data analysis

To analyze the data, we used both deductive and inductive processes. We utilized the qualitative data software program NVivo to initially code the transcripts using an a priori code book encompassing three code categories, which aligned to our research questions and were based upon the literature review as well as the theoretical framing (Maxwell 2012). These code categories were: (1) teacher accountability: teachers' understandings of responsibilities, both imposed-external and voluntary with regard to Common Core State Standards (CCLS) implementation; (2) teacher evaluation: teachers' reactions to or assessments of the annual professional performance review system (APPR); and (3) teacher supports: strategies to prevent teacher isolation as well as provide social supports and instructional resources to ease implementation of the CCLS, DDI, and APPR. As we assigned codes, we kept memos of burgeoning interpretations.

Next, we reviewed the code reports for odds-beating and typically performing schools separately identifying themes within the two sets of focus groups in light of our framework. We used conceptually-ordered matrices to organize the data and to identify major patterns and themes of contrast between odds-beating and typically performing schools (Miles et al. 2013). Our purpose throughout was not to include all of the themes that were discussed in the focus groups, but rather, to describe and illustrate the most salient themes as they relate to the research questions and our emerging conceptual framework.

Findings

One of the goals in the focus groups was to collect information about teachers' perspectives toward the three RTTT policy innovations under investigation and with special interest in how their perspectives may have varied as a function of working in an odds-beating school versus a typically performing one. Our analysis also was structured by our interest in whether and how school contexts (i.e. community and school histories and perceived or real contextual affordances and constraints for adaptation in districts and schools) might relate to teacher agency, engagement, efficacy, and emotional resilience during disruptive innovation.

To foreshadow salient findings, we discovered that agency circulates in the teachers' experience and that it influences their engagement with innovations, is related to their self and collective efficacy, and signals important information about their emotional resilience during disruptive policy innovation implementation.

Agency, self, and collective efficacy: "It's a trust issue"

Framed by important contrasts between typical performers (TP) and odds-beating (OB) schools, we begin with illustrations from a selection of teachers in TP schools who voiced a perception that their abilities to teach were being called into question. We have selected the following quotes as evidence as they reveal teachers' perceptions of a lack of trust in their professional judgement and an accompanying loss of agency, and reduced self and collective efficacy. As discussed earlier, teacher agency can be expected to vary depending upon affordances and constraints for trusting and collaborative relationships within the school, district, and community context and these all are constructed over time (Priestley et al. 2016; Stosich 2016; Supovitz and Spillane 2015).

Typically performing suburban Locus Glen Middle School provides an important example. Here, budget and staffing cuts were instrumental in the elimination of teaming, which had supported time for teachers to collaborate on aligning curriculum across subjects and also for daily discussions of each student. Set in the context for this change, two Locus Glen teachers, Sarah and Chen (all teacher names are pseudonyms), reported that the challenges of adapting to the CCLS themselves were not the central issue of concern for them. Rather, what mattered was the implementation strategy adopted by district central officers and school leaders. Specifically, teachers in this school were required to use the CCLS materials provided by the New York State Education Department (i.e. modules) with fidelity, and they viewed this implementation strategy as problematic. They saw this strategy as an exercise of power over not only what, but how they teach. In theoretical terms, this strategy limited their agency, starting with their choice and voice and extending to supports for their professional judgment and discretion. Limited agency, in turn, was associated with reductions in their self and collective efficacy.

> Well, I think innovation went out when the modules came in. The Common Core we liked. Common Core was good, but you put that with the modules and I think innovation and… (Sarah, October 15, 2014).

> Professionalism, and trust in the educators went. There doesn't seem to be a lot of "hey I know you're a good teacher and I am going to let you do what you do best, because we hired you and we believe in you." And incrementally control was taken away from us. First it had to be you're teaching the same thing at the same time. Now we have to teach the modules. And now our grade books have to look identical. It's just one more thing in a litany of ways to take control away from us. I think it makes us feel devalued (Chen, October 16, 2014).

Beyond issues of CCLS implementation, teachers drew connections between APPR and DDI and their self and collective efficacy. Examples from Tim and Julie who teach at TP Wolf Creek Elementary School are instructive. Wolf Creek is a large rural district that was hard-hit in the 2008 recession with 20 percent of the teachers laid off. Significantly, Wolf Creek teachers expressed generally negative

feelings about the APPR system seeing it as a way of calling them out to be accountable for children's performances individually and unfairly. They admitted that the situation had left them preoccupied with avoiding low test scores that they nonetheless deem as invalid measures of student learning. Both adults and the children in their charge are implicated when teachers do not see a pathway to assert agency on behalf of children and when they hold little self and collective efficacy about how and what they teach.

> The Common Core tests are a joke and here's why. It's been written that these tests aren't going to count on the kids transcripts until 2016 or whatever. The parents don't care because it's not going to count on their kids' records. The kids don't care. So we're accountable, but nobody else is. The kids don't have to be accountable. The parents, kids, politicians don't have to be accountable for it. It all comes back on somebody here (Tim, March 8, 2014).

> The Common Core, APPR, and DDI together has taken away from us the ability to be the teachers we want to be. You can't stop those kids who are suffering because you have to move on. It's like sacrificing the few for the many. That's not what teaching should be… (Julie, March 7, 2014).

Teachers in the OB schools provide an important comparison. OB teachers descriptions indicated that they did not experience the kind of scripted compliance-oriented control of their practice as their peers did in TP schools. These teachers generally described more flexibility with how they teach and at what pace as they implemented the CCLS, which in turn helped buffer threats to their self and collective efficacy.

For example, at odds-beating suburban Hutch Hill Middle School, a school with a history of data-driven instructional practices within a collaborative school culture, Nancy expresses agency in how or whether she utilizes materials such as modules. She associates this agency with self-efficacy.

> I am perfectly willing to adapt the modules, and I think it's wonderful to have these materials to be able to adapt from. However, if I were ever forced to completely adopt material that would take away from my feeling of autonomy and even trusting my professionalism (Nancy, September 30, 2014).

Likewise, John, who teaches in odds-beating small rural Eagle Bluff Elementary School benefitted from his principal's clear messages to use his professional judgement as he implemented the CCLS. After describing a caring school climate and a leader committed to building relationships with everyone in the school, John voiced his appreciation for having agency with regard to how he teaches to ultimately meet his students' needs.

> With the modules, our principal wanted to make a point of saying, don't just strictly use the modules. Use other things as well, take from them, use what you can, if you like it, do it, but use what's going to help the kids (John, March 19, 2014).

In this section, we describe the ways TP teachers expressed resignation and frustration as they felt compelled to comply with the external controls placed upon them. Twin reminders are in order about these teachers: resignation and frustration implicate emotional reactions and orientations, and teachers' expressed loss or decrease of choice and voice is an indicator of low or threatened agency. Significantly, these same teachers (with feelings of resignation, frustration, and low or threatened agency) expressed an inability to advocate for children through modifications in their instruction and particularly with regard to pacing.

In sum, the top-down, compliance-oriented implementation of RTTT innovations with tight fidelity controls in TP environments, particularly those that proscribed scripted instructional practices and pacing, constrained teachers' agency to apply professional judgement. These forces ultimately negatively impacted their self and collective efficacy and extended to their interactions with children including what and how they taught.

In contrast, teachers in OB school contexts that had experienced similar resource challenges as TP schools when they entered into implementing the RTTT innovations, benefitted from opportunities to exert agency in how they translated the CCLS into practice with their deep knowledge of children's needs recognized as leaders' expressed messages of trust in their professional judgement. As these examples show, the community and organizational forces and factors such as economic downturns, reduced funding to schools, and consequential reductions in staff and other resources as well as leaders' implementation strategies influence teachers' agency, self and collective efficacy during disruptive innovation.

Engagement and resilience: "It's the way you approach this whole thing"

All human relationships and interactions focused on helping others involve emotions. Emotions (i.e., affect or feelings) are an inherent part of caring for others. Reciprocally, emotions are involved when one is being cared for by others (Noddings 1986). Emotional resilience can be enacted as "bouncing back" from emotionally-disturbing and disruptive change (Day and Gu 2013; Pugliesi 1999). The qualities of teachers' engagement and emotional resilience during innovation implementation were prompted in focus groups when teachers were asked to describe their work life during the period of innovation implementation.

Teachers' responses in both OB and TP schools shared a common characteristic: They perceived their work experiences as stressful and exhausting. For example, in OB Yellow Valley ES, a suburban school situated in a mostly blue-collar community suffering the loss of manufacturing jobs and relatively high family mobility, Angelica expressed emotional fatigue and frustration with regard to the APPR process in particular.

> It [the APPR process] is exhausting, but it's how you approach it as a teacher. You know how hard you're working. It's a 24 hour a day job and the possibly if your scores don't come out alright, you're a 15 year teacher, you know how hard you're working, and you come in at the developing level. That would just be a slap in the face! (Angelica, January 22, 2014)

While teachers in both OB and TP schools shared emotions of stress and fatigue as exemplified in Angelica's statement, APPR effects with regard to engagement and resilience served to identify the greatest contrasts among and between teachers in OB and TP schools. For example, although OB school teachers like Angelica described being exhausted and having their self-efficacy challenged by the rating of their teaching through the APPR system, she and other OB school teachers reported benefitting from a variety of supports that maintained their engagement and bolstered their resilience. For example, Kishmar, who teaches in Sage City, a large suburban middle school serving a diverse student population, enjoyed a school-wide agreement to use collective APPR scores (all teachers' scores counted together).

> A number is not going to affect me because we get a score for the whole school. And anyway, I know I'm a good teacher. I know that everyone around this table meets their kids' needs and is dedicated (Kishmar, January 22, 2014).

However, in TP schools teachers reported indicators of burnout and a feeling of senselessness both individually and collectively, implicating disengagement and low self and collective emotional resilience. Kathleen, a teaching assistant at suburban Paige City Elementary School where a redistricting effort that included changing boundary lines for elementary schools, teachers shifting buildings, and some building closures, indicated that fear of English language learners (i.e. ESL students) performing poorly negatively affected everyone in her school.

> There definitely is a lot more stress on the teachers because of APPR. I think some teachers probably have concerns because they have ESL students in their class and those students aren't going to achieve highly on the state exams at the end of the year. It's a domino effect. So we teaching assistants go into a classroom where a teacher is really struggling, in the back of her or his mind is that APPR, and we get hit with a lot more. You can feel the domino effect of stress (Kathleen, June 3, 2014).

Similarly, Alison and Julie from TP Wolf Creek Elementary School expressed indications that the extent of adaptation being asked of them was beyond what they were capable of handling and this spread from the individual to the collective.

> The APPR evaluation system is so much more paperwork. To me, the thing that's been the most frustrating has been the amount of paperwork that takes away so many hours in the day. I start my day at 4:45 am and it ends at like midnight. I'm working hours and hours and hours. It's a feeling of senselessness. It's coming out of the best part of my teaching (Alison, March 7, 2014).
>
> For all of us, it's made us more burnt out (Julie, March 7, 2014).

Thus, while teachers in both OB and TP schools reported experiencing emotional stress and fatigue during innovation implementation, differences in the social and relational aspects of teachers' work and workplace came to the fore as individual teachers reported the influence of their colleagues and the social ecologies of their

schools, districts, and communities impacting them differently. As illustrated in the TP schools, teacher isolation whether perceived or real was related to costs in the forms of stress and fatigue, resulting in disengagement. In addition, social contagion effects (whereby orientations and actions spread from one individual to others) as well as multiplier effects (whereby an initial orientation becomes compounded over time and with experience) are apparent in these schools as expressed by such characterizations as a "domino effect" of stress.

Self and collective efficacy and engagement: "It hasn't been competitive"

Compassion, psychological attachments, receptivity, relatedness, and responsiveness are all indispensable aspects of caring for others. All depend fundamentally on emotion. More than behavioral displays, these emotional features also serve as identity markers. More specifically, they comprise what Lord and Brown (2004, p. 50) call one's "relational identity"—the helping, nurturing, and caring relationships with others that define the self, both on the job and in one's personal life. It follows that one's relational identity would be associated with self and collective efficacy as well as how and what ways individuals engage with one another. In this section, we focus on how teachers describe engaging or relating to each other, what kinds of behaviors they display or don't display and for what reasons, in response to focus groups questions related to the kinds of things that helped their adjustment to the CCLS, APPR, and DDI.

In general, teachers indicated that school and district leaders play an important role in advocating for them and nurturing an environment conducive to them nurturing and advocating for each other and for the children in their charge. In OB schools, teachers indicated that district and school leaders do this in part by modeling and setting norms for collaboration. For example, at OB Laribee Middle School, a suburban school with a changing demographic (increasing poverty) and decreasing enrollments, yet where district and school leaders encouraged teachers to adapt materials early in the RTTT implementation, Valerie, Jim, and Richard describe a "collegial" environment and one in which shared responsibility for all students' performance is expected.

> The one nice thing that hasn't happened here, and I know that it's happening other places is that it hasn't been competitive. So I'm developing a great lesson in my room, and it's not like I'm going to say "Okay you can't have this". "I know that this is effective, I know that it's working but shhh… don't tell anyone because I only want us to use it." That's not happening here. You're still seeing a high level of collegiality, you're still seeing the collaboration that exists between grade levels, between departments, between content area teachers. So that, I think, is wonderful because I know that in many areas the effect of APPR has been people feeling very private about things (Valerie, November 14, 2014).

> Yeah and you don't see people trying to cherry pick who their students are going to be (Jim, November 14, 2014).

> We don't try to farm different kids out. Because if you want to get a good APPR score, you could easily, at the beginning of the year, get rid of three or four of these guys and you'll do a lot better (Richard, November 14, 2014).

In addition, teachers in the OB schools described leaders buffering the potentially negative influences of the innovations on teachers' self and collective efficacy by providing what teachers perceive as relevant and sufficient resources, professional development opportunities, and teaming structures. All such strategies and structures support and facilitate positive cognitive, emotional/affective and behavioral responses as expressed by Amanda and Bob from Bay City Elementary School. There, district and school leaders differentiated professional development offerings to prepare for the RTTT innovations depending on teacher, department, or building need through the use of instructional coaches and organized staff into teams to tackle implementation challenges together.

> We have support from the district. This district always provides curriculum and resources. I've been working here twenty years. I've never gone a year without being handed a lot of resources. We have classrooms full of stuff and pd on different ways of teaching. It's always good to give that to teachers. Some districts don't do it at all, but our district always has (Amanda, March 20, 2014).

> As far as our environment and staff, it's a very big team approach. We all work together, the teachers, the administration, the counselors, the psychologists (Bob, March 20, 2014).

Teachers in TP schools provide an important contrast. For example, Carlene and Annette voice a common refrain, and it associated with feelings of isolation in what they experience as a competitive atmosphere. Both teach at small suburban TP Sun Hollow Elementary School where leaders and staff identify insufficient resources, including a lean central administration as limiting their abilities to adapt to the RTTT innovations optimally.

> I think people sometimes feel competition here. In fifth and sixth grade, we're pretty compartmentalized (Carlene, June 4, 2014).

> We tend to get so wound up. We teach almost across the hall and we'll go two or three days and we haven't even seen each other because there's a rule that we don't even leave classrooms for lunch (Annette, June 4, 2014).

Although the TP teachers tended to see their building "administration" as supportive, such as Robin and Janet from Paige City Elementary School described earlier, they also identified barriers to their collaboration and shared learning stemming from insufficient district-level resource allocations:

> I completely believe that our administration in this building supports us 110 percent but we are not a small corporation. I mean, we are all here governed

> from the top and we have a district administration building and we're school number seven you know. They have to think in terms of what's good for the whole district. Sometimes we may not be getting as much support as we would like from our district but we always have 110% from our administration here in the building (Robin, June 4, 2014).
>
> Administratively I think our principal is wonderful. I think she supports us. She fights for us and going to district offices saying we need more support or saying these are where the numbers are. I think she advocates for us and wants us to have the necessary tools and professional development to do the job well (Janet, June 4, 2014).

Within organizational contexts, like those in OB schools in this study, that provide support for teacher collaboration and opportunities for bottom-up (e.g. teacher team/PLC) problem-solving as opposed to competition, teachers express self and collective efficacy and willingness to engage with each other collaboratively. These individual and collective expressions of efficacy serve as facilitators for their engagement. Evident in individual teachers, this orientation during disruptive innovation implementation is also a collective phenomenon, and it is one that implicates leadership strategies and the characteristics of odds-beating schools as work organizations with particular strategies, structures, and routines that support well-functioning teams and PLCs that lubricate both bottom-up and top-down mechanisms for student, staff, and organizational learning.

However, the opposite is also true: in TP schools competition and teacher isolation amount to a potent dis-engaging combination (cognitively, affectively/motivationally, and behaviorally), and their effects are fueled and exacerbated by required, oftentimes solo, routines and strict implementation schedules. These several organizational factors reduce agency, depress collegiality, and impede the development of collaborative work cultures, and relate to the erosion of self and collective efficacy and emotional resilience.

Conclusions and implications

We proposed at the outset of this analysis that disruptive innovation implementation, especially top-down policies that target performance adaptations among teachers like RTTT, offer timely opportunities to learn about contextual differences in schools' adaptations as manifested in the relationship among teacher agency, efficacy, engagement, and emotional resilience. The success of RTTT as a bold systems change effort depended in part on people's willingness and ability to adapt. To do this, individuals, teams, and communities of practice at every level of the system—district office leaders, principals, teachers, student support professionals, and others—would have to disrupt some of their pet routines and adopt new ones. This is especially true of classroom teachers who are at the front lines of implementation. Our analysis has provided a focus on teachers and one that connects teacher agency, efficacy, engagement, and emotional resilience to the district office mechanisms for innovation leadership and resource allocation, school

leadership structures and strategies, and collaborative teams and communities of practice within school that relate to differential student outcomes (i.e. odds-beating or typical).

Our analysis has demonstrated that innovation implementation and research of it benefits from close attention to how the social and organizational context influences, and is influenced by, teachers' experiences with, (1) exerting choice and voice (agency), (2) receiving and circulating messages that what they do and how they do it is good and worthwhile (efficacy), (3) interacting with each other, children, school and district leaders as well as family members in holistic, developmentally-oriented, and sensitive ways (engagement), and (4) opportunities to learn and maintain motivation even in the face of new challenges (emotional resilience).

The contrasts between teachers in OB and TP schools provide empirical evidence that people who do not feel agentic, and whose self and collective efficacy are challenged do not have an equal chance of gaining and maintaining these and other desirable teacher attributes. Rather, different district and school contexts offer different affordances for their development that reciprocally support or depress engagement and individual and collective resilience. These affordances are cognitive, emotional/affective, and behavioral (Baard et al. 2013) and, significantly, also are social, as evidenced in the social contagion effects and multiplier effects presented in the preceding analysis. It is noteworthy that these same three features (cognitive, emotional/affective and behavioral) are prominent in student engagement research (Lawson and Lawson 2013), extending to recent conceptualizations that emphasize students' social engagement and its relationship to academic outcomes (McFadden and Munns 2010). Thus, one might ask if teachers' responses to disruptive innovations might extend to the qualities of their interactions with and beliefs about their students—questions for future inquiry.

The findings from this study hold policy and practice implications as well as research ones. They suggest important conditions that might facilitate desirable performance adaptations among teachers in concert with the implementation of disruptive innovations and they are instructive as the next, predicable, wave of innovations are implemented. For example, district and school contexts characterized by distributed leadership and shared decision-making are exemplars for power-sharing, professional discretion, and the development of accountable autonomy (Fullan et al. 2015). Likewise, organizational contexts characterized by high levels of trust lubricated by effective communications, grounded in beliefs regarding, commitments to, and strategies for teachers' professionalism, help to optimize conditions for the adaptive integration of disruptive policy innovations such as the CCLS, APPR, and DDI (Wilcox et al. 2017).

It follows that implementing innovations successfully in school and district contexts with different individual competencies among teachers and staff, variable organizational capacities to absorb innovations, and in communities serving unique populations and with unique histories, is not merely a technical undertaking as Honig (2009) among others have asserted. It is a human one: one that requires an explicit focus on individual and collective teacher agency, efficacy, engagement, and resilience within context. This study's findings suggest that policies requiring systems-changing innovations are more likely to be facilitated and sustainable when

teachers' agency, engagement, efficacy, and emotional resilience are emphasized from the outset; and also when the following conditions are in evidence in some measure: (1) teachers interact, plan, and learn together and support each other in teams and communities of practice; (2) district office and school missions, goals, and leadership priorities emphasize high standards and equity of opportunity for learning for all students as well as for the adults who serve them; (3) new teachers are prepared for student diversity and experienced teachers have received student diversity focused professional development that is responsive to their needs and concerns in service of their sustained agency, efficacy, engagement, and resilience; (4) innovation adoption and implementation proceed with teachers-as-partners and co-designers, including permissible innovation adaptation guidelines and mechanisms for top-down and bottom-up learning and improvement; and (5) a district office-school "911 system" for teachers is in place, enabling timely responses to their needs for coaching, mentoring, peer supports, and responsive professional development resources.

If this study has offered empirical and theoretical contributions for future studies that explore the relationship among the teacher (and potentially student) characteristics of agency, efficacy, engagement, and resilience—both individual and collective, then it has achieved one of its most important aims (Ferguson et al. 2015; Nagaoka et al. 2016).

Limitations

One limitation to our study is the absence of survey measures of teacher agency, efficacy, engagement, and resilience. While relevant survey measures offer insight into each of these phenomena of interest, this study was structured to explore relationships among them. Qualitative descriptions via focus group data thus were justifiable, albeit with explicit recognition that these data did not offer the advantages associated with survey research. This study will achieve one aim if it encourages future research including survey research that joins these four concepts and facilitates the identification, description and explanation of school and district office variability.

In addition, although we have drawn on literature that suggests connections between student agency, efficacy, and engagement and teacher agency, efficacy, and engagement, we did not have access to student data. Consequently, our assertions regarding their connections are tentative and recommend follow up studies that include children and youths.

Finally, since this multiple case study design included 18 schools and data collected within a constrained time period, we cannot claim generalizability of the findings or claim that the views teachers expressed during 2-day site visits were inclusive of all of the perspectives they might express throughout a school year. If we had studied a different set of schools, included different participants, or collected data at different times of the school year, our findings may have varied.

Acknowledgements This article was crafted with the help of doctoral student Mary Jo Morgan who extracted codes and assisted with the first stages of analysis. We would like to also recognize the following people for their assistance with recruitment, data collection, and data analysis in the larger study from which this one emerged: Francesca Durand, Linda Baker, Kathryn Schiller, Kathy Nickson, Michael Lawson, Shari Keller, Hal Lawson, Dorothy Porteus, Karen Gregory, Ben Malczyk, Michelle Bianchi, Sarah Zuckerman, Fang (Lisa) Yu, Sharon Wiles, Nisa Felicia, Juliana Svistova, Lynn Lisy-Macan, Deb Byrne, Piera Camposeo, John Costello, Heather Kurto, Aaron Leo, Christl Mueller, Gretchen Oliver, and Kemm Wilson. Most importantly, we would like to acknowledge all of the teachers, teaching aides, support staff, ENL teachers, and special education teachers who took time to share their experiences with our research team.

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