IMPROVEMENT SCIENCE AND THE EVERY STUDENT SUCCEEDS ACT: AN ANALYSIS OF STATE GUIDANCE DOCUMENTS

The Every Student Succeeds Act (ESSA) provides guidance and expectations to state education agencies. We examined the intersection of improvement science and ESSA through a qualitative analysis of the state guidance documents. Utilizing six principles of improvement as a conceptual framework, we identified three themes: improvement as an outcome; an emphasis on measurement; and a lack of improvement science terminology. This study contributes to the growing dialogue regarding improvement science's place in education policy.

Keywords: education policy, ESSA, improvement science

Introduction

Educational contexts across the United States are beholden to policies adopted at local-, state-, and federal- levels. Due to long-standing traditions of local- and state-controlled education systems, policies and practices vary across states despite having common policy rules to address. This is seen through the implementation of the Every Student Succeeds Act (ESSA, 2015), the most current reauthorization of the Elementary and Secondary Education Act (ESEA). ESSA is the successor of No Child Left Behind (NCLB) (No Child Left Behind Act of 2001) which required reporting and actions related to education reform and had difficult expectations to meet (Ravitch, 2010). ESSA's goals include: (a) setting high college and career readiness standards; (b) allowing state oversight for accountability and resource distribution for school improvement; (c) State Education Agencies (SEAs) using more evidence-based practices to drive school improvement; (d) encouraging the use of annual assessments in a way that is not intrusive to teaching or learning; (e) increasing preschool access for more children; and (f) providing resources for innovation for education reform with demonstrated posi tive results in improving education (Sharp, 2016).

Because ESSA's goals address topics of improvement, data, access, and educational resources, we argue there exists potential for educators at various organizational levels to engage with the tenets of improvement science—an arm of continuous improvement—in their practice. Improvement science leans on "cyclical rather than linear approach-

es, emphasize[s] collaborative over administrative research designs and focus[es] on formative data to guide improvement projects and initiatives" (Crow, 2020, p. 6). Improvement researchers (Hinnant-Crawford, 2020; Langley, et al., 2009) argue improvement can be understood as a model for testing change. Three fundamental questions of improvement ask: "What is the exact problem I am trying to solve? (i.e., What am I trying to accomplish?) What change might I introduce to solve it (and why)? How will I know that change is an improvement?" (Hinnant-Crawford, 2020, p. 1).

A growing body of research demonstrates ways improvement science is used in schools and districts (Hannan et al., 2015; Tichnor-Wagner, 2018). Even foundations such as The Carnegie Foundation for the Advancement of Teaching and The Gates Foundation have dedicated resources to improvement work in education, a notable observation for this study since Mitra stated, "foundations have become a major source of influence in educational policy at the national and state levels," (2018, p. 54).

To what extent an improvement approach is encouraged in federal policy requirements, we examined how and where continuous improvement or improvement science was present in two ESSA policy output documents: the *Revised State Template for the Consolidated State Plan* (herein referred to as the *State Template*) and the *State Plan Peer Review Criteria* (herein referred to as the *Review Criteria*).We selected these as they directly impact state-level policy as each was required to develop and submit a plan to the federal Department of Education for review and approval.

The federal government's level of involvement in matters concerning (SEAs) has ebbed and flowed for decades (Nelson & Weinbaum, 2009). For example, NCLB marked a time when the federal government asserted stronger oversight, prioritizing attention to education as vital for U.S. success in a global community (McGuinn, 2006). Similarly, ESSA positions education reform as necessary for increasing academic achievement across the nation (Mathis & Trujillo, 2016). Bryk and colleagues (2015) found chronic failure of education reform was impacted by the claim that in order to improve education, leaders must make immediate, sweeping changes. Examples of practices that work in specific contexts that fail to translate to broad school reform include small high school initiatives and rigorous teacher evaluation processes (Bryk et al., 2015).

Diverting from the large-scale change implementation paradigm, an improvement science framework offers a different approach, where educators dedicate efforts to understand the problem and create disciplined, incremental change to drive context-appropriate improvement (Bryk et al., 2015; Hinnant-Crawford, 2020; Langley et al., 2009). Indeed, improvement science has seen an increase in use by local educational professionals. Coupled with the notion that educational reform and practice are influenced by policy requirements, it is helpful to understand
the extent to which federal policy (e.g., ESSA) aligns with current prac-

tice. Improvement science has the potential to create effective change and reform and forward equity work in education. Because improvement science focuses on seeing the systems, those engaged with this framework are "less likely to fall victim to deficit perspectives, blaming students and/or their communities for unwanted outcomes" (Hinnant-Crawford, 2020, p. 103). Similarly, researchers such as Bryk and colleagues (2015) and Biag (2019) detailed that improvement science operates from an understanding that our systems are working as designed to produce the results they yield. Thus, improvement science is a powerful tool for disrupting the status quo as it positions practitioners in their own organizational contexts to make systemic changes to yield more equitable results.

To better understand the connection between ESSA and improvement science we examined the following question: *To what extent do ESSA's requirements for state compliance invite a continuous improvement or improvement science approach in their policy language?* In the remainder of this paper, we describe our conceptual framework rooted in the tenets of improvement science. We then offer a brief literature review, followed by our methods, findings and discussion, and some implications for policy, practice, and research.

Conceptual Framework

Bryk and colleagues (2015) named six principles of improvement that anchor improvement work. The principles of improvement provided an analytic lens to examine to what extent a convergence existed between federal policies and the distributed guidelines for SEAs with improvement science. These principles, described in turn below, demonstrate the intersection of theory and praxis to illustrate ways improvement practices support quality, and equitable improvement.

Principle 1: Make the Work Problem-Specific and User-Centered

Principle one implores improvers within an institution, organization, or system to focus on the user—the individual who is experiencing the area you want to improve. User-centered design approaches problems in a bottom-up fashion since it engages individuals tied closest to the elements leading to specific outcomes and offers information on the true aspects of persons' roles (Bryk et al, 2015). This approach is paralleled in other frameworks such as design thinking where those who are the target audience for a product or experience inform its development to best meet users' needs (Brown, 2009). In relation to policy, Bryk and colleagues (2015) argue that education policy has missed the mark on orienting its development process within a user-centered approach. To the extent policy is focused on the user and problem area is important because while policy may be created at the upper levels of our government, it relies on those at

the grass roots, in this case administrators, teachers, and other educational professionals, to carry it out (Fowler, 2013).

Principle 2: Focus on Variation in Performance

This improvement principle, Bryk et al. argue, asks that education reform move "away from simplistic thinking about solutions in terms of 'what works?' toward a more nuanced appraisal of 'What works, for whom, and under what set of conditions?" (2015, p. 13-14). Interrogating the variation in the system by asking those questions can reveal areas of inequities, spotlighting places for improvement targets. Researchers such as Yurkofsky and colleagues (2020) similarly highlighted the challenges that accompany reform devoid of addressing context and system variation, noting recent shifts toward continuous improvement approaches to educational change that do consider context. Change efforts that acknowledge variation invite purposeful improvement processes to create lasting effects.

Principle 3: See the System that Produces Current Outcomes

A nuanced understanding of the educational system one seeks to change is represented in this principle of improvement. Here, the individual seeking to improve must zoom out to see the complex workings of various root causes and processes that come together to create specific outcomes (Hinnant-Crawford, 2020). Success in improvement efforts is not determined by solo actors or processes but rather the culmination of these in the larger system (Langley et al., 2009). A systems view is frequently absent or partial in approaches to school reform. Bryk et al. (2015) argue that "most education reforms reflect at best a partial understanding of system dynamics, and some seem almost oblivious to the fundamental character of the phenomena they seek to change" (p. 58).

Principle 4: We Cannot Improve at Scale What We Cannot Measure

Individuals seeking to improve a specific outcome must be able to measure the various aspects of the process. Without continuous feedback, a false sense of progress may arise where none exists (Bryk et al., 2015). Knowledge that change is working comes through use of various measurements for differentiated purposes (Hinnant-Crawford, 2020) and could include both qualitative and quantitative evidence. Bryk and colleagues (2015) highlighted the increase in annual measurement used in federal policy starting with NCLB. This data, however, "exacts a price: while the measurements can signal where improvements are needed, they rarely provide the detail needed to help teachers and schools actually improve" (p. 91).

Principle 5: Use Disciplined Inquiry to Drive Improvement

Consistent feedback helps drive implementation of the improvement effort (Bryk et al., 2015). Improvement science points towards iterative cycles of inquiry such as a Plan-Do-Study-Act (PDSA) cycle, where first, improvers *plan* a small change and determine how to test the change. Next, they *do* the change and utilize measurement tools to see the impacts of implementation. Then, they *study* collected data to examine if results met the expected predictions. Finally, *act* on what was learned, determine if the change produced the desired outcomes and make adjustments. Immediately following the *act* stage, the organization should circle back into the plan stage for the next iteration of testing or scaling the implementation (Byrk et al., 2015). The PDSA cycle is a valuable tool "designed to build new knowledge with each additional cycle about what works, what does not work, for who, and under what conditions" (Hinnant-Crawford, 2020, p.160).

Principle 6: Accelerate Learning Through Networked Communities

Effective improvement requires collaboration. Networked Improvement Communities, (NICs) "are highly structured, intentionally formed collaborations among education professionals, researchers, and designers that aim to address a high leverage practical problem" (Russell et al., 2017, p. 4). NICs help increase the speed at which institutions involved are able to learn by simultaneously collecting data and implementing changes across a variety of contexts and systems (Hinnant-Crawford, 2020).

Literature Review

The presence of improvement science in education practice is an emergent field of study. This study focuses on the intersection of improvement science principles and the language of ESSA. We focused our literature review in three-related areas that help guide our understanding: (a) the influence of policy on practice; (b) studies focusing on ESSA; and (c) improvement science in education.

Influence of Policy on Practice

Policy can impact educational practice and vice versa, evidence from practice can impact policy (Coburn, 2005; Honig, 2003). Strydom and colleagues (2010) argue that inclusion of evidence in the policy-making process is more effective and efficient than, "policies formulated through ordinary time-constrained and politically-constrained processes without evidence input" (p. 1). The role of evidence influences various as-

pects of policy making. One such way is in agenda setting where evidence helps surface problems facing society and provides a mechanism for policymakers to utilize research and evidence to effectively address their policy agenda (Strydom et al., 2010).

Contextualizing policy's connection to education practice reveals challenges. For example, Coffield and colleagues (2007) did not find evidence that policy directly translated to teaching practices during implementation. They found policy frequently increased bureaucratic duties of teachers while sometimes detracting from actual teaching time. Further, they state policy levers sometimes exact high costs on institutions and may result in unintended consequences deleterious to the institution's function (Coffield et al., 2007). Policy acts as both a signal and symbol to schools. As a signal, it helps educators understand new expectations for which they will be held accountable, and as a symbol it points to where policymakers are placing value and priorities (Jimerson & Childs, 2017).

Studies on ESSA

ESSA aimed to return decision-making flexibility to SEAs in how they operated schooling in their states, ultimately reducing the federal oversight that had been previously amped up in NCLB (Mathis & Trujillo, 2016). As a departure from NCLB, scholars noted ESSA continues to perpetuate the more "unproductive structures and reforms that NCLB prescribed" (Mathis & Trujillo, 2016, p. 6). ESSA still prioritizes testing to measure academic success and continues state sanctions based on test results (Mathis & Trujillo, 2016). Despite criticisms, ESSA offers SEAs flexibility to address context-specific problems, and, as this study posits, holds potential to invite improvement science as continuous improvement into the fabric of education policy.

Previous studies on ESSA examine areas such as teacher distribution (Fuller et al., 2017), school leadership development (Young et al. 2017), and college and career readiness (Malin et al., 2017). Darling-Hammond and her colleagues (2016) explore states' opportunities to restructure their accountability systems under ESSA. They, along with Dynarski (2015), acknowledge ESSA's focus on evidence-based intervention. Studies demonstrate ESSA focuses heavily on data and the requirement for states to report their data (Fuller et al., 2017; Young et al., 2017)—a vestige from the NCLB-era (Mathis & Trujillo, 2016).

In their report, Dynarski (2015) illuminate a connection between the call for evidence-based practices and improvement science, asking districts to "work with improvement scientists to adapt interventions with evidence of effectiveness and monitor the results" (p. 4). While this shows the convergence of policy and improvement science, little else was written beyond encouraging districts to engage with improvement science professionals to effectively implement interventions. While not a stated

connection to improvement science specifically, the importance of using evidence to reveal equitable and inequitable practices in schools is found in the leadership literature. Shields's (2010) research, for example, describes the work of transformative leaders. Shields (2010) proposed that, "a fundamental task of the educational leader in this transformative tradition is to ask questions, for example, about the purposes of schooling, about which ideas should be taught, and about who is successful" (p. 570). Her language parallels the three key questions referenced above that improvers ask: 1) What works?; 2) For whom?; and 3) Under what conditions? Evidence then can be utilized to help the work of the improvement scientist to intersect with transformative leadership and create equitable change to a system.

Evidence of Improvement Science Application in Education

Improvement science shows promise in driving lasting reform in public schools (Bryk, et al., 2015). Improvement science application to educator professional development holds merit because it does not rely on outside experts but rather is more insider, user-focused (Wright, 2019). Although there is promise and improvement science methods are garnering attention of educational professionals, the principles of improvement science are still emergent. Lewis (2015) notes the lack of research centered on improvement science, writing,

> Yet there is relatively little education research in the improvement science tradition, which emphasizes building organization members' understanding of the problem and its causes, buy-in to improvement, identification of improvement ideas within and outside their organization, and rapid testing of promising ideas through PDSA cycles (p. 55).

Similar to the body of research on communities of practice (Wenger, 2000), some improvement science research focuses on networks where scholars such as Glazer and Peurach (2013) argue their promise. They wrote that the success of improvement efforts, like school improvement networks "will increase if policy makers and philanthropists strengthen the community infrastructure supporting school improvement networks," (p. 703). Networked Improvement Communities (NICs) have the ability to diffuse knowledge about and across various contexts widely and quickly (Wright, 2019). One such successful application of a NIC is the Building Teacher Effectiveness Network (BTEN) (Hannan et al., 2015). Among other themes, Hannan and colleagues' (2015) study found a myriad of challenges arise if educational professionals are engaged in counter-normative work present in some education reform efforts.

Improvement science has shown success in driving equity and ac-

cess work in educational contexts. Bryk (2020) details the work of the Fresno Unified School District and how an improvement science framework allowed the district to address equity issues that had not been apparent previously. Through their use of continuous improvement, the district was able to address graduation rates, equity of advanced coursework offerings, and mismatching of graduates with undergraduate universities. Bryk (2020) explained that these tools went beyond the limitations of traditional accountability structures to produce a more equitable school district.

Finally, research on improvement science has explored education research practice itself as it requires researchers to shift focus toward a systems view of a context (Cohen-Vogel et al., 2015) while simultaneously shifting how participants are viewed. Cohen-Vogel, et al, (2015) posited that, "the roles between participants *in the process* and researchers *of the process* become blurred," (p. 271) pointing to the participatory and user-centered nature of improvement science.

Methods

Data Sources

We engaged in a qualitative content analysis to address our research question. Our data sources, the *State Template* and the *Review Criteria* are guidelines SEAs used to craft their *Consolidated State Plans* which detail how they aim to meet ESSA expectations and improve student outcomes. Specifically, the *State Template* provides the structure for SEAs to develop then submit their plan to the U.S. Department of Education for review and approval. We make the assumption that the language in the *State Template* would drive the design of states' ESSA *Consolidated State Plan,* signaling prioritization of processes and goals. Relatedly, its companion document, the *Review Criteria* is accessible to SEAs but is used by the federal-level peer-reviewers of submitted states' plans and explains what should be present to sufficiently meet policy expectations. While both documents are relatively short, they fundamentally impact the implementation of ESSA, committing states to actions and priorities articulated in their plans.

Coding

The data sources were uploaded into *NVivo* 12 to organize coding and analysis. Initial coding was guided by the utilization of *a priori* codes (Saldaña, 2016). A priority of this study aimed to determine explicit and implicit policy alignment to improvement science. Therefore, we generated a list of terms specifically related to improvement science; these served as search terms to locate patterns for coding the *State Template* and *Review Criteria*. Two improvement science texts drove the selection of domain-

specific terms: Hinnant-Crawford's (2020) book, *Improvement Science in Education: A Primer* and Langely and colleagues' 2009 book, *The Improvement Guide*. We argue the terminology of improvement science (e.g., improvement science, networked improvement, root cause, iterative cycles, improvement aim) would illuminate the extent to which current policy is asking SEAs to incorporate this framework. The dearth of matches of the *a priori* codes in cycle one led to a second cycle: line-by-line open coding to determine indirect or implicit presence of the *a priori* codes that could precipitate use of improvement science approaches in states' enactments of ESSA. Our analysis focused on organizing and comparing coded excerpts against the six principles of improvement.

Findings and Discussion

Our analysis revealed repetition across the documents, many coded portions were permutations of other sentences, changing one word or phrase to address different sections of the policy. We argue the *State Template* and the *Peer Review Criteria* only partially aligned with our conceptual framework, the six principles of improvement, and we offer three themes that emerged during analysis.

Improvement as Outcome and Not Process

Through our analysis, we found the concept of improvement was treated more as an outcome or desired end goal rather than a process as scholars of improvement encourage (e.g., Bryk et al., 2015). This is illustrated by language in the *Review Criteria* stating, "does the SEA identify (i.e., by providing a numeric measure) and describe the long-term goals for all students for improved academic achievement, as measured by grade-level proficiency on the annual statewide reading/language arts and mathematics assessments" (p. 9). Similarly, the *State Template* asked SEAs to:

> Describe the long-term goals for improved academic achievement, as measured by proficiency on the annual statewide reading/language arts and mathematics assessments, for all students and for each subgroup of students, including: (i) baseline data; (ii) the timeline for meeting the long-term goals, for which the term must be the same multi-year length of time for all students and for each subgroup of students in the State; and (iii) how the long-term goals are ambitious. (p. 9)

Improvement in this way has been framed as the outcome (e.g., improved proficiency score) rather than the process through which the system is improved resulting in desired, goal-oriented outcomes. In these cases, it seems the term "improvement" in the policy document could be substituted for the word "increase." This harkens back to sentiments by Darling-

Hammond (2007) on NCLB when she noted, "the biggest problem with the Act is that it mistakes measuring schools for fixing them" (p. 249). The improvement literature and improvement scholars would argue that improvement cannot singularly be the outcome but must also include the processes that shape the system to get the outcome.

Principle five argues for the "use of disciplined inquiry to drive improvement" (Bryk et al., 2015, p. 113). Improving the system(s) though actions like interrogating and making changes to those systems for sustained improvement would position the SEAs to utilize iterative cycles of learning such as the PDSA cycle as a "framework for an efficient trial-and-learning methodology," (Langley et al., 2009, pp. 24-25), ultimately resulting in more successful implementation of school reform. This type of improvement process, however, is not how improvement seems to be framed within either the *State Template* or the *Review Criteria*.

An Emphasis on Measurement

The fourth principle of improvement states "we cannot improve at scale what we cannot measure" (Bryk et al., 2015, p. 87). There is, unsurprisingly, a strong focus on accountability throughout the *State Template* and the *Review Criteria*. During first cycle coding, the most abundant terms in the documents were *measurement for accountability* (i.e., 26 references) and *measurement for improvement* (i.e., 22 references). Coded as *measurement for improvement*, was the "measurements of interim progress" language—a required component for states to address in their plans. Hinnant-Crawford (2020) defined measurement for improvement as, "data collected to inform improvement efforts… [they] are collected frequently, embedded in day-to-day tasks, and are written in a language for various stakeholders to understand" (p. 217). Initial analysis led us to believe that "interim progress" would be those indicators states use to check the effectiveness of strategies on their way to their end goal(s), similar to what Hinnant-Crawford described above. Further examination revealed these measurements of interim progress were coupled with measurements of and for accountability. The initial use of "measurements of interim progress" in the *State Template* states: "Provide the measurements of interim progress toward meeting the long-term goals for academic achievement in Appendix A," (p. 9), and are included in the section: "Statewide Accountability System and School Support and Improvement Activities." With federal policymakers tethering interim measures to the accountability systems section signals their interpretation of these measures are a form of accountability reporting. While the words "interim progress" may read as in the vein of continuous improvement, the manner in which they are presented (i.e., as a part of accountability systems) could result in states interpreting this as an outcome, compliance reporting, and accountability measure.

This focus on accountability may be a barrier to schools' and dis-

tricts' ability to engage in meaningful improvement in schools, particularly in those schools that need it most. For quality improvement to occur, there must be a practical measurement system in place (Bryk et al., 2015). This system provides vital information to continuously learn and adjust to make sure that progress toward the desired outcomes is in place. Because the policy is already asking states to have accountability systems built, a practical measurement system for the purposes of improvement may be a place for states to inject improvement science processes. Strict accountability systems that do not take into account the variety of contexts in which schools exist in within their state may hinder quality improvement to occur, resulting in "solutionitis" which is, "the tendency for educators to jump to conclusions about the best solution before fully defining the problem" (Hinnant-Crawford, 2020, p. 45).

Portions of the *State Template* did align with improvement measures, such as, "describe how the State will use data and ongoing consultation as described in ESEA section 2101(d)(3) to continually update and improve the activities supported under Title II, Part A," (p.17). Sections such as this, paired with the flexibility for SEAs and local education agencies to interpret measurements for interim progress, would open up states' consolidated plans to utilize improvement science while addressing adopted policies.

Lack of Improvement Science Terminology

Our third theme is less about what was included and more about what we discovered was not included. The *State Template* and the *Review Criteria* did not include explicit expectations for using improvement science in their policy language, and, thus, there is an absence of the remaining four principles of improvement (i.e., Principles one, two, three, and six). Both coding cycles yielded a dearth of improvement science concepts. Across both, key improvement terms such as *continuous improvement* and *root cause analysis* were not included at all. Many of our *a priori* codes, in fact, were not found in the documents. In the *Review Criteria*, the closest to an explicit mention of continuous improvement or improvement science was regarding evidence-based practices. The term evidence-based appeared under a section regarding technical support for comprehensive support schools. The *Review Criteria* asked reviewers: "Is the technical assistance likely to improve student outcomes by, for example, 1) identifying State approved evidence-based interventions; 2) supporting LEAs and schools in the development and implementation of support and improvement plans; and 3) differentiating the technical assistance?" (p. 15). Cunningham and Osworth (in progres) found the use of explicit improvement science language emergent in multiple state plans, yet this does not appear to be congruent with what the policy asks for SEAs to produce in their *Consolidated State Plans*. One way to explain this could be through what

Mitra noted related to how the U.S public education system exhibits loose coupling: "loosely-coupled systems allow for innovation" (2018, p. 111).

This overall lack of explicit language of improvement science does not preclude the use of improvement science in SEAs' plans but rather leaves a door open for innovation to occur at the state level. We view this as a promising way for continuous improvement frameworks to be utilized in the future, despite the absence of directives within policy outputs to do so. While flexibility gives educators the ability to infuse their plans for policy implementation with cutting-edge best practices emerging in the field, it also can allow education agencies to miss these opportunities and instead perpetuate the status quo from previous policy iterations—a not-all-that-uncommon practice in the transition from NCLB to the ESSA (Mathis & Trujillo, 2016).

Implications

Implications for Policy

A mainstay in education reform policy is an emphasis on measurement (McGuinn, 2006; McGuinn, 2016; Ravitch, 2010), and the evidence from this study corroborates this claim. Measurement and emphasis on accountability fit within the shape of schooling society has come to expect, and policy fits within that mold focusing on outcomes rather than processes. Although change is possible, the grammar of schooling works to slow change that happens within U.S. school systems (Tyack & Tobin, 1994). In line with what Strydom and colleagues (2010) noted, there is an opportunity for policy makers to examine emerging trends and evidence related to how improvement science can be effectively woven into educational policies to support effective change. Some state level policy actors are doing this already as there exists evidence of schools and districts prioritizing continuous improvement practices (Hannan et al., 2015), and some SEAs are including improvement science in their plans to achieve the expectations of ESSA (Cunningham & Osworth, in progress). Future policy can advance the use of improvement science by considering continuous improvement processes in its language and outputs (e.g., future iterations of the *State Template* and the *Peer Review Criteria*).

Education policy formation and implementation is complex, even messy, due to the high number of policy actors involved. Attention should focus on, "how policies play out in real contexts, in the midst of real pressures and complications" (Jimerson & Childs, 2017, p. 585). There are plenty of examples of policy implementation going awry at the user-level as this is where policy is typically enacted (Fowler, 2013). Evidence from prior studies suggests a disconnect between evidence, subsequent predictions of outcomes, and what policy requires. If reauthorizations and iterations of policies are meant to move education practice forward, there is a

need for policy makers to consider and engage in the improvement science principle of being user-centered (Langley et al., 2009). A role of policy is not only to align to goals or address a problem but also to serve as a symbol, signaling what is being prioritized. As Jimmerson and Childs noted, "Policies simultaneously provide a public symbol of a desire for improved academic outcomes and signal expectations for data use that are not reflective of the kinds of practice research suggests would actually result in those outcomes" (2017, p. 601). This illustrates the disconnect that may exist between the symbol and signal (e.g., measures of interim progress), but also the breakdown of evidence appropriately informing policy making (Strydom et al., 2010).

Implications for Practice

There is clear evidence that ESSA focuses on measurement and accountability, continuing the trend of education policy and reform focused on quantitative testing. However, despite an explicit focus on measurement and testing, educational professionals are not precluded from utilizing improvement science as a process to achieve positive change for their students. This is congruent with the findings of Cunningham and Osworth (in progress) who observed the use of improvement science in the language of some states' consolidated plans. Despite disconnects between policy and practice or between policy makers and educational professionals, there are opportunities within ESSA for strategic educators to meet policy expectations while leveraging best practices set forth in the improvement science literature.

Implications for Research

There is promise in prior literature documenting improvement science's application to educational systems can drive meaningful change and reform (Bryk et al., 2015). In the current field there is a lack of research considering the nexus of policy and improvement science. Future research in this area should examine: (a) what policy levels include explicit or emergent language of improvement; (b) to what extent policy language that includes improvement science impacts local policy implementation of improvement science; (c) how improvement science is being used to enact policy at the grass-roots level; and (d) how those practices influence future policy language.

Conclusion

Education policy in recent federal iterations focused on the improvement of schools in a combination of specific and vague language (Nelson & Weinbaum, 2009). This study examined the extent to which

ESSA's requirements for state compliance reflect cutting-edge trends in the field to specifically invite a continuous improvement or improvement science approaches within their policy outputs. Through a qualitative document analysis of the *State Template* and the *Review Criteria*, we looked at areas where continuous improvement and improvement science may be emergent in the federal policy or the ways in which it may be able for states to utilize in order to meet ESSA's expectations.

While there was a dearth of explicit improvement science terms used within the federal documents provided to SEAs, we ascertained three themes related to the six principles of improvement (Bryk et al., 2015). In the first, Improvement as Outcome and Not Process connected to Principle Five: Use Disciplined Inquiry to Drive Improvement. The second described the Emphasis on Measurement related to Improvement Principle Four: We Cannot Improve at Scale What We Cannot Measure. Our third theme presented is less about what was included and more about what we discovered was not included. In this third theme—Lack of Improvement Science Terminology—we suggest the ESSA policy documents (i.e., the *State Template* and the *Review Criteria*) do not include explicit expectations for using improvement science in their policy language, and we noted the absence of the other four principles of improvement.

These themes suggest way policy language and potential school reforms by SEAs might apply under federal expectations with or without requiring continuous improvement and improvement science.

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