How do schools learn as organizations? Understanding of growth mindset during a school improvement initiative

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At the heart of any school reform, intervention, or innovation striving to make lasting change is the need for organizational learning—the development of embedded routines and practices that transcend merely surface level improvements and instead, are lasting changes (Fiol & Lyles, 1985). As such, organizational learning (OL) is considered a cornerstone for organizational change and improvement (Levitt & March, 1988). Despite the rising tide of public school reforms, few have had a lasting impact on the school practices, culture, and behavior (Datnow, 2005; Fink, 2000; Hargreaves & Goodson, 2006; Palmer, 2016). Even with well intentioned, carefully considered, and thoroughly executed efforts, there is a tremendous chasm between the knowledge that reforms aim to teach schools and what schools as organizations are actually learning.

In the same way scholars attempt to diagnose gaps in student learning, this paper strives to understand the nature of organizational learning in schools, including the process through which teachers and schools obtain new information, how learning progresses through the organization from the individual teacher to the organizational levels, and what the learning process at various stages of information acquisition looks like. Additionally, we examine supports and barriers to organizational learning in schools. The broader literature on the implementation of school improvement programs finds that organizational structures such as professional development, resources, and school leadership are key predictors of how teachers understand and implement new programs (Collinson, Cook, & Conley, 2006a; Dodgson, 1993; Leithwood, Leonard, & Sharratt, 1998; Scribner, Cockrell, Cockrell, & Valentine, 1999).

Though there is some debate around what stage learning happens in an organization, there is general agreement that OL is a multidimensional process, spanning across individuals, groups, and organizational levels (Bapuji & Crossan, 2004; Huber, 1991). To capture this complexity, we use the 4I organizational learning framework developed by Crossan, Lane, & White (1999), which structures OL through a series of four stages experienced by individuals, groups, and organizational

stakeholders. Employing this framework helps unpack the nuances in learning as an organization progresses through the knowledge acquisition process, and importantly, the supports and impediments to progressing through the stages of OL. Drawing from data collected from a larger, multi-year study, we utilize this organizational learning framework to assess OL within an urban district implementing a school-based, teacher-driven improvement initiative. Specifically, we examine the following research questions:

1) How does a school organization learn a new school reform?
2) What organizational supports and impediments help or hurt the organizational learning of the school reform?

The school improvement effort studied here focuses on three high schools engaged in design-based research through a partnership between researchers, school-based practitioners, and district leaders in a large, urban district. A district team consisting of administrators, classroom teachers, and researchers developed a school-based initiative that focused on developing student ownership and responsibility (SOAR). As part of the initial design, the district and school teams agreed to implement practices encouraging students to develop a growth mindset, defined by Dweck (2006) as a way of thinking that holds that intelligence is malleable and that skills and talents can be developed through effort. In partnership with external program developers and researchers, the teacher-led teams developed and implemented practices within their school aimed at promoting growth mindset in their students, such as professional development for teachers and classroom lessons for students. We draw from an expansive set of over 250 interviews with teachers, school-based team leaders, and principals in these three schools. These interviews included questions intended to gauge participants understanding and practices of SOAR concepts, including growth mindset.

Our data positions us to examine the nature of OL in a multi-year school improvement effort. Given that growth mindset was a central tenant of the SOAR program common to all three participating high-schools and was actively supported by program developers, researchers, and teacher-leaders, we are able to track the progress of the organizational learning around growth mindset. Unlike studies of school reform which span only one year, we are able to analyze interview data from three site visits spanning two years of program implementation. This allowed for more time for the program to take shape in each of the three schools. Furthermore, since we collected data from teachers, teachers leading the implementation of the initiative, and administrators, we are able to analyze organizational learning at the individual, organizational, and to some extent, group levels. Furthermore, access to process and interview data on teacher perceptions of the program provided information on the structures and impediments to implementation as experienced by the teachers leading and implementing the program.

We find that after two years, teachers are able to provide an explanation of growth mindset by relating it to concepts they have experienced in the past. Despite recognizing the importance of building a common set of language and practices around growth mindset, few teachers report using a shared language, and only pockets of individual teachers report adapting growth mindset practices into their own classroom routines. Instead, growth mindset practices implemented by the program fade out after the first year of implementation at two schools, and after just one semester at the third. Moreover, the practices that are primarily implemented not due to the routinization of behavior, but out of compliance. There is no evidence of the institutionalization of practices. This finding is of particular note; even in a well-received, teacher-led initiative, we find little evidence of institutionalization. Regarding supports, numerous teachers identify professional development as key to facilitating understanding of growth mindset, but lament the lack of time and individual and school capacity to focus on growth mindset practices.

The paper is organized as follows. In Section I, we describe the organizational learning model we use as the conceptual framework for our analysis. Section II synthesizes the prior literature on the application of the 4I framework in schools, as well as studies using alternate organizational learning frameworks to examine OL in schools. Sections III and IV detail the data collection and analysis methods used, as well as the context of the larger study these data are drawn from. Section V presents results on the nature of OL in our sample, as well as the supports and barriers to OL under the 4I framework. Section VI explains the significance of these findings from both a researcher and practitioner lens. Section VII concludes.

I. Conceptual Framework

Originating in the business and management literature, organizational learning has been applied to school improvement and change for the past two decades (Leithwood & Louis, 2000; Scribner et al., 1999; H. C. Silins, Mulford, & Zarins, 2002). Organizational learning (OL) is generally defined as the processes through which new knowledge is introduced and then embedded into an organization's routines and practices (Collinson, Cook, & Conley, 2006b). Huber (1991) describes OL through a behavioral perspective, where an organization proceeds through the stages of knowledge acquisition, information distribution, information interpretation, and organizational memory, stating that "an entity learns, if, through its processing of information, the range of its potential behavior is changes" (Huber, 1991, p. 89). As such, OL may involve refining existing ideas, reexamining existing norms, or implementing new actions through cognitive and behavioral changes (Leithwood et al., 1998). Similarly, Brown & Duguid (1991) emphasize learning to be a dynamic, integrated process achieved through learning by doing, with knowledge transfer occurring through storytelling and group collaboration. Like individual learning, OL is fundamentally about enacting persistent changes in norms, behaviors, or practices. However, since organizations are collectivities

of individuals (Leithwood et al., 1998), OL is thought of as a multilevel process, occurring at the individual, group, and organizational levels (Bapuji & Crossan, 2004; Collinson et al., 2006a; Crossan et al., 1999; Fiol & Lyles, 1985; March, 1991; Simon, 1991).

At the individual level of learning, Argyris and Schön (1978) describe organizational learning as an iterative process of action and reflection that develops the knowledge and practices of the individuals within organizations. Simon (1991) writes that the learning of an individual depends on his or her prior beliefs and knowledge base, as well information on the organizational context. The second tier of learning is often framed as being at the "group" or "collectivity" level in which individual learnings and behaviors contribute to the overall understanding of the "collective mind" (Leithwood et al., 1998, p. 246; Spector & Davidsen, 2006). The final level of organizational learning is learning at the institutional level. Here, learning is described as the development of organizational routines, which are derived from logically appropriate or legitimate actions towards a goal that "match [the] procedure to situation", and include factors such as rules, procedures, conventions, codes, cultures, and paradigms (Levitt & March, 1988, p. 320). Thus, not only does OL presuppose behavioral and cognitive change in its members, but it also assumes that organizational members develop a shared understanding at the group level and that new knowledge and practices are embedded into new or altered organizational routines (Collinson et al., 2006b). OL frameworks provide the necessary link between the individual, group, and organizational levels, and provide a language to describe both the structures and processes contributing to OL (Argote, 2013; Huber, 1991; March, 1991).

In this study, we employ Crossan, Lane, and White's (1999) 4I organizational learning framework, a multidimensional model describing the sequence through which organizational learning occurs. As shown in Figure 1, the four stages, or processes, of learning—intuiting, interpreting, integrating, and institutionalizing—occur at the individual, group, and organizational

levels. These stages do not simply occur in a linear fashion, as concurrent feedback and feedforward loops aid in advancing learning in this dynamic process. In the intuiting stage, individuals form a preconscious understanding of the patterns inherent to a new concept, connecting these patterns to their prior knowledge. This stage occurs inside the mind of the individual. As individual and groups of stakeholders interpret the new knowledge, they begin to explain the idea to themselves or others, and develop a verbal language to explain this understanding. In the integrating stage, groups and organizations develop a shared understanding of the concept and take coordinated action towards implementation. This process is informal and often ad hoc, occurring through dialogue and joint action amongst groups. Finally, institutionalizing is a series of formal actions at the organizational level that routinize the new learning; as such, "tasks are defined, actions specified, and organizational mechanisms put in place to ensure that certain actions occur" (Crossan et al., 1999, pp. 5–6).

[INSERT FIGURE 1 APPROXIMATELY HERE]

The 4I model holds that learning is a dynamic process and tracks the flow of information through the organization via feed forward and feedback loops, which describe the interpreting to integrating, and institutionalizing to intuiting processes, respectively. Moving from the interpreting to integrating stage (feed forward) requires learning to shift from individuals to groups, while moving from institutionalized learning to intuiting (feedback) requires a temporary destruction of institutional order to allow individuals to generate intuitive insights into the knowledge being learned.

The benefits of using the 4I framework are threefold. First, the 4I framework captures the multilevel nature of organizational learning, in which OL progresses through the three stages of learning, namely, individual, group, and organizational, through four developmental processes. Second, 4I centers around strategic renewal—reforms where the organization must make improvements within the existing environment and set of organizational conditions via feedback and

feed forward loops. As such, 4I captures the dynamisms that is central to the learning of school organizations. Third, the framework allows researchers to track supports and breaks in the transition process from one stage to another, providing crucial knowledge for leaders and policymakers alike to improve OL as learning progresses from one stage to the next.

II. Literature Review

The 4I framework is not often used to understand OL in schools despite its utility in examining the stages and levels of learning (Crossan & Berdrow, 2003; Dutta & Crossan, 2005; Lawrence, Mauws, Dyck, & Kleysen, 2005; Pan & Chen, 2011; R. E. Porter, Fusarelli, & Fusarelli, 2015). However, researchers have applied a variety of OL theories to study education reform and change and have examined the role of school leadership, organizational conditions, and social dynamics in facilitating OL in schools (Frank, Zhao, & Borman, 2004; García-Morales, Lopez-Martín, & Llamas-Sánchez, 2006; Leithwood et al., 1998; Marks & Louis, 1999; Penuel, Frank, Sun, Kim, & Singleton, 2013; Schein, 1993; Scribner et al., 1999; H. Silins & Mulford, 2002; Sun, Penuel, Frank, Gallagher, & Youngs, 2013). These studies have largely focused on OL as the result of an external stimulus, such as the introduction of new programs and policies in schools. In the review below, we focus our attention on studies applying the 4I framework, as well as studies that use frameworks other than 4I that focus on the OL of schools. Our analysis extends the use of the 4I organizational learning framework to better understand how learning occurs within the context of a teacher-driven, school-based improvement initiative.

Only one study has employed the 4I framework to analyze the OL of schools. In a recent comparative case study, Porter, Fusarelli, and Fusarelli (2015) use qualitative teacher survey, interview, and focus group data to examine the implementation of the Common Core State Standards (CCSS) in two public elementary schools in North Carolina. They justify their use of the

4I framework as an appropriate way to maps the way in which learning captures "the interaction between cognition and action" (R. Porter, 2013, p. 13). The study found that most of the focus of the initial implementation of the CCSS focused on teachers intuiting and interpreting the Common Core policies as opposed to integrating it into practice, and despite receiving frequent training, only a few participants felt confident in their understanding of the policy after one semester. The authors conclude that teachers were often forced to integrate the new standards into practice before fully working through the intuiting and integrating stages, and that similar issues of uncertainty regarding practices were found at the individual, group, and organizational levels of implementation. Though application of the 4I framework helped disentangle observed phenomena into clear and distinct phrases, the authors were unable to glean information on the institutionalizing phase of OL with only one semester of data. The 4I framework has been applied by a handful of studies in other disciplines to both generate hypotheses on the nature of OL, and to test hypotheses on how OL takes shape (Crossan & Berdrow, 2003; Dutta & Crossan, 2005; Lawrence et al., 2005; Pan & Chen, 2011).

Additionally, a number of studies on educational administration and educational evaluation apply framings other than 4I to examine the nature and outcomes of OL in school reform efforts. Scribner et al. (1999) use Argyris and Schön's (1978) description of OL as a two-level process consisting of single- and double-loop learning through which organizations continuously reassess underlying assumptions while improving organizational practices (similar to what 4I defines as feed forward and feedback loops). Using a two-year qualitative case study design, Scribner et al. observe a school improvement process using professional learning communities (PLCs) in three middle schools. In looking both within- and across-schools in the study samples, the authors are able to generate broad themes that suggested that there were four organizational factors that influenced whether or not the professional community was established. Findings also suggest that there were

and that double-loop learning process enacted by the schools were important to sustaining the new learnings.

Marks and Louis (1999) similarly draw from the framing of Argyris and Schön (1974) in a hierarchical linear modeling analysis of school's capacity for OL given varying levels of teacher empowerment. They argue that teacher empowerment through altered leadership structures, and greater opportunity for collaboration, allows for improved individual- and group-level learning, which facilitates the OL process. Using teacher survey data from 24 site-managed elementary, middle, and high schools, they find that self-efficacy is the strongest predictor explaining teacher learning, and thereby, increased organizational capacity for learning.

The findings from these and other studies shed light on both the organizational interconnectedness that facilitate OL, as well as the particular characteristics of schools and employees that best predictors movement of the learning from the individual up to organizational level. However, the aforementioned studies contain limitations we aim to address with our paper. Scribner et al. focus on how the organizations created and maintained their learning processes as opposed to tracking progression of learning from the individual to the organizational level. Moreover, while Marks (1999) quantitatively measures how organizational capacity for learning and OL itself are related to teacher leadership, the study does not measure the progression of OL from initial introduction to the creation of formalized routines. Our analysis addresses these limitations by opening the black box of OL by mapping the organizational learning process.

Support and Barriers to OL

Our second research question aims to analyze the supports and barriers within schools that facilitate or hinder OL. We examine specific structures that—either intentionally or unintentionally—bolster or bar an organization from fully developing the learning processes at or

between particular stages. We review studies that examine organizational structures and conditions that facilitate OL in schools, and find that scholars typically address broad conditions that support OL or specific conditions that support OL in a particular stage, instead of structures that support or impede learning progression.

Collinson et al. (2006a) argue that there are six general organizational conditions that foster learning: prioritizing learning for all members, facilitating the dissemination of knowledge, skills, and insights, attending to human relationships, fostering inquiry, enhancing democratic governance, and providing for members' self-fulfillment (Collinson et al., 2006a, p. 110). The authors highlight practices such as helping members develop professional networks in teams, providing feedback, structuring purposeful teacher-teacher and teacher-principal interactions, engaging in conflict resolution, and establishing shard norms. From a quantitative study of survey data from three distinctly structures schools in Europe, Leithwood et al. (1998) found depth of member understanding of the reform, supports for district initiatives, teacher leadership, and professional development to strengthen the OL process in the three schools.

Other scholars focus on structures that support the transitions between specific phases in the 4I framework. While the authors do not themselves connect their work to the stages of the 4I framework, the structures assessed map well on to the 4I framework. For example, Huber (1991) contends that greater OL occurs when more of an organization's individuals obtain knowledge and believe it to be useful, which ultimately fosters the development of a shared understanding (Intuiting and interpreting). Regarding interpretation and integration of practices, Thoonen (2011) find that teacher self-efficacy, organizational conditions, and leadership practices explain teacher learning and implementation of practices, and conclude that to improve teacher learning and implementation of new practices, schools should employ transformational leadership practices to affect changes in organizational conditions, teacher motivation, and professional learning. Relatedly, García-Morales

et al. (2006) and Datnow (2005) the characteristics required to institutionalize practice. García-Morales et al. (2006) address specifically how practices such as developing shared values or investing in teacher professional development facilitates or hurts organizational learning. Similarly, Datnow's (2005) research findings suggest that schools with high capacity to routine the practices required by a reform have superior OL since they can better institutionalize their practices.

Some scholars also describe and test the barriers to OL. For instance García-Morales et al. (2006) argue that the addition of factors that disrupt or remove such supports ultimately block individual and group learning, which prevents institutionalization to take place. Simon (1991) and Fiol and Lyles (1985) find that OL is negatively affected by teacher turnover, stability of membership in roles, and organizational memory.

III. Context

This study focuses on the school improvement efforts of three high schools engaged in design-based research through a partnership between researchers, school-based practitioners, and district leaders in a large, urban district. Table 1 describes the demographic and performance information about the district and the three high schools participating in this project. A district team consisting of administrators, classroom teachers, and researchers developed a school-based initiative that focused on developing student ownership and responsibility (SOAR). As part of the initial design of SOAR, this team agreed upon certain non-negotiables of the initiative, including practices that would promote students' growth mindset, problem solving abilities, and goal-setting. SOAR was piloted, refined, and adapted by school-based teams consisting primarily of classroom teachers (see Cohen-Vogel, Cannata, Rutledge, & Socol (2016) for more information on the improvement model). School-based teams, consistently mostly of teachers, developed and implemented practices within their school aimed at promoting growth mindset in their students,

such as professional development for teachers and classroom lessons for students. The first year of school-wide implementation for SOAR was during the 2014-2015 academic year.

[INSERT TABLE 1 APPROXIMATELY HERE]

As part of the initial design of SOAR, the district and school teams agreed to implement practices encouraging students to develop a growth mindset. A theory about intelligence created by Carol Dweck, growth mindset is a way of thinking that holds that intelligence is malleable and that skills and talents can be developed through effort. Fixed mindset, in contrast, is a belief that intelligence and talent are innate and unchangeable. One main contrast between people with different mindsets is how they approach failure. As Dweck (2006) explains, those with a growth mindset see failure as an opportunity to learn and growth while those with a fixed mindset see failure as a setback or indication that you will never succeed in a particular area. Research on growth mindset, and more generally on theories of intelligence, have differentiated between these two approaches to thinking about intelligence and personality traits. Research on students have found that those who ascribe to the growth mindset approach, also referred to in the literature as an incremental theory of intelligence, are more likely to have more positive attitudes about the value of effort, to make goals around learning (i.e. mastery) rather than goals around performance (i.e. grades), and to attribute failure to lack of effort rather than lack of ability (Blackwell et al., 2007; Dweck & Leggett, 1988; Hong, Chiu, Dweck, & Wan, 1999). Although very few studies have explicitly examined how teachers develop growth mindsets in themselves or students, many scholars writing about the promise of interventions targeting student mindsets are quick to point out the critical role of teachers in implementing these programs (Durlak et al., 2011; Farrington et al., 2012; Yeager & Walton, 2011; Yeager, Walton, & Cohen, 2013).

Our analysis of organizational learning within the context of SOAR focuses on growth mindset for three reasons. First, all three schools involved saw growth mindset as a core tenant of

SOAR and implemented practices related to growth mindset from the beginning of school-wide implementation of SOAR. Second, unlike problem solving and goal setting, growth mindset is a specific and relatively new concept that teachers had less exposure to prior to the implementation of SOAR. We did some encounter teachers who had heard about growth mindset prior to the implementation of SOAR, often through teacher training programs, but many teachers were learning about growth mindset for the first time. Finally, there is increased public and policy interest in growth mindset interventions—and other initiatives focused on non-cognitive skills—in schools. However, very little extant research examines how teachers and schools respond when introduced to growth mindset. This analysis aims to fill this gap by focusing on the process of organizational learning in schools during the implementation of a growth mindset initiative.

IV. Data and Methods

The data for this analysis comes from fieldwork at each of the three high schools at different time points during the initial implementation of SOAR. The first fieldwork visit was conducted in October 2014, a few months after SOAR had been introduced school-wide. The second visit was conducted at the end of the first year of school-wide implementation, in April 2015. The third visit was conducted the following school year, in March 2016. During each visit, teams of researchers spent four days in each school conducting interviews and focus groups with administrators, teachers, and students. The data for this paper is drawn from interviews with school administrators and teachers. These interviews included questions intended to gauge participant understanding of SOAR concepts, their will to implement SOAR practices, and the practices that teachers had actually

implemented in their classroom related to SOAR. In total, the analytic sample includes 257 interviews across the three high schools that were conducted during the three fieldwork trips.[1]

All interviews were recorded, transcribed, and thematically coded through the use of NVivo, a qualitative data analysis software. The research team created a coding framework for the data from each fieldwork visit through a collaborative, iterative process. First, members of the research team collectively developed a baseline framework of codes based on the core concepts identified in the overall research and school improvement design. The research team then independently coded sub-sets of transcripts and then met together to reconcile differences, clarify meaning, make changes to the framework, and discuss emergent codes. This process was repeated until sufficient agreement was reached on the comprehensiveness of the coding framework and the meaning of individual codes. For each wave of data collection, members of the research team wrote analytic memos to capture initial findings about specific elements of interest, such as the practices teachers reported implemented as part of SOAR, their capacity to implement these practices, and supports provided to teachers (such as professional development) by the school teams leading implementation of SOAR. These memos include separate analysis for each of the three schools and then a summary section that compares and contrasts findings across the three schools.

Given that growth mindset was a core component of the school improvement model at each school, teachers often brought up growth mindset in their interviews. In many cases, teachers were asked to directly define growth mindset and explain how (if at all) they had incorporated growth mindset practices into their classroom. To identify the relevant data for this analysis, we gathered the interview data from the code intended to capture participants' understanding of SOAR

[1] The research team did not visit Smith High School during the March 2016 fieldwork visit. The administration and teacher leadership at Smith had decided not to continue participating in SOAR during the fall 2015 semester. The research team did return in June 2016 to conduct 11 interviews with teacher-leaders and administrators to better understand this decision. Those interviews are included in this analysis.

components, including growth mindset. We also gathered the analytic memos, many of which had been written by the authors, on related factors. These included memos on the adoption and spread of SOAR practices in the school, how teachers were supported through professional development to implement SOAR, and other organizational factors the influenced the implementation of SOAR. In some cases, these memos included sections specifically about growth mindset, which were utilized for this analysis. The data for this analysis therefore includes both interview data and analytic memos written from this data. All data is organized chronologically by school.

Similar to other research on organizational learning in schools, our analysis takes a longitudinal, comparative case study approach (Collinson et al., 2006a; Hargreaves & Goodson, 2006; R. E. Porter et al., 2015; Scribner et al., 1999). We utilize the dataset described above to assess the stages and levels of organizational learning around growth mindset for each school throughout the initial implementation of SOAR. To answer our first research question, we utilize the organizational learning framework developed by Crossan and colleagues to guide our analysis of organizational learning at each school (Crossan et al., 1999). We assess the four stages of learning in each school: (1) intuiting, (2) interpreting, (3) integrating, and (4) institutionalizing. As described in our theoretical framework, the intuiting and interpreting processes are primarily individual, while interpreting and integrating typically occur at the group level, and institutionalizing occurs at the organization level. To assess the individual level of learning, we utilize teacher interview data in which teachers describe their own understanding and practices related to growth mindset. The group level analysis consists of how teachers and administrators report on how teacher working groups (PLCs, grade-level teams, and the teacher leadership team tasked with implementing SOAR) within each school worked together to discuss and implement SOAR practices. We assess organizational level learning based on teachers' reports of their use of growth mindset practices, teacher and administrator reports on the organizational structures supporting SOAR, and evidence of any

organizational routines created to promote growth mindset. To answer the second research question, we then developed emergent codes by reading within schools to determine how organizational structures and mechanisms contributed to the stages of learning in each school. We identified themes by comparing the stages and levels of organizational learning across schools along with organizational structures that supported growth mindset practices and the barriers that hindered learning at the individual, group, and organizational level.

V. Results

In examining the data, we found more similarities than differences across the three schools, which we have named Williams, Hancock, and Smith High Schools. Hence, we present themes within each of the four stages that largely emerged from comparing the three schools. Notable differences between schools are presented in the relevant subsections below. In general, we found substantial evidence of the intuiting and interpreting stages of teachers beginning to understand and work through new knowledge of growth mindset; a large proportion of teachers in our sample across all three schools somewhat understood growth mindset and were able to describe their understanding in general terms. There was moderate evidence of teachers taking collective action to integrating growth mindset practices into their daily teaching routines. There was no evidence of the organization taking steps to institutionalize growth mindset into the school. Teachers report early professional development and locally-created resources and materials provided as supports to interpreting and integrating the new knowledge about growth mindset. A lack of time, the competing responsibilities of teachers, a withdrawal of leadership, and inconsistency in implementation were identified as barriers to OL.

For our first research question, we examine themes and patterns between and across schools for each of the four organizational learning stages. The intuiting stage cannot directly be observed directly since it occurs in the mind of the individual. In the interview protocol, we asked teachers to describe their understanding of growth mindset, and how s/he would know if a student had a growth or fixed mindset. Their responses give us some insight into how teachers use words to make sense of growth mindset (part of the interpreting process) as well as their use of images and metaphors in describing growth mindset (part of the bridge between intuiting and interpreting). As Crossan et al. (1999) explain, images, and metaphors provide "a critical link in the evolution from individual intuitive insight to shared interpretation. Individuals use metaphors to help explain their intuition to themselves and to share it with others." We present evidence on intuiting and interpreting together since we cannot directly observe the largely subconscious process of intuiting.

Intuiting and Interpreting. The teacher-leaders who led implementation of SOAR at all three schools had spent more time in trainings and meetings discussing growth mindset ideas and how they would translate into practices that affect students. They had participated in quarterly meetings and summer training specifically focused on SOAR concepts and how to design innovations within their school. At all three schools, other teachers (those not leading implementation of SOAR) had been introduced to SOAR and growth mindset concepts in professional development offered the year prior to implementing SOAR, over the summer, and/or during in-service training at the beginning of the school year. Teachers were provided materials about growth mindset, often in the form of lessons or student activities that they would be expected to use in lessons that introduce students to growth mindset. Although these trainings differed across the schools, it appears that almost all teachers in all three schools were exposed to ideas about growth mindset through professional development aimed at the whole school or content-specific PLCs.

In describing their understanding and awareness of growth mindset, teachers related growth mindset to prior concepts and initiatives they had experienced in the past and often saw growth mindset as something that they already do at the school. For instance, one teacher at Williams H.S. said that he has "always been one to believe in the whole growth mindset, trying to solve problems, of find a way to make it happen." Teachers provided general definitions of growth mindset, describing it as having an "I can do it" attitude, a "positive outlook," or a perspective where you "think outside the box."

Teachers and teacher-leaders alike often articulated their understanding and use of growth mindset using analogies and examples instead of providing a definition. If teachers gave a definition, they often used language that was largely descriptive and without specificity, saying growth mindset meant someone who was "open-minded" or who did not get "stuck" when faced with a problem. Teachers describe students with growth mindsets as students who can "give you multiple solutions to a problem" or students that can "find a way around" their problems. However, many teachers drew on specific examples, images, or metaphors to explain growth mindset. One teacher from Williams H.S. compared having a growth mindset to having "Mike Tyson philosophy" saying:

> Growth mindset is from time to time you're going to get knocked to the ground. You pick yourself up, you learn from it, and you move on. I mean, that's pretty simple. I don't think anyone would confuse Mike Tyson for a philosophy…Mike Tyson, no philosophy, but he did say one time…everyone has a plan until they get punched in the face. And if you think about it for a second, even though this is Mike Tyson that said it, it's pretty profound, and that's really—that's what growth mindset is about. You're going to face these obstacles.

Another teacher at Williams H.S. provided an illustrative example of someone with a fixed mindset:

> For example, look at that Rubik's cube. I can't do that because I'm stupid. That would obviously be a fixed mindset. Look at that Rubik's cube. I have tried this five times already and I have failed miserably. I think that if I spent enough time on that and maybe looked up some techniques, I could do it. I could learn how to do it. I have the ability to improve.

Although these teachers use very different analogies, they are able to describe a concept that is integral to growth mindset—how to learn from and overcome challenges.

Teachers leading SOAR implementation in all three schools largely had a deeper understanding of growth mindset as conceptualized by Dweck, and frequently used language around improving brain capacity through effort. At Hancock, teacher-leaders specifically linked growth mindset with brain neuroplasticity. For instance, one teacher-leader commented, "that the brain—you can always change—your brain is always changing. It's not stagnant. It's not static." Furthermore, both teacher-leaders and administrators often highlighted the importance of developing growth mindset in teachers in order for SOAR to be successful. At Smith H.S., a teacher-leader emphasized her belief that "we need to change teachers' mindsets before we change students' mindsets." Administrators described newer teachers as having a growth mindset since there were "willing to just take…feedback and suggestions and go, okay, I'm going to try that…they're willing to do anything to affect change in their classroom," whereas veteran teachers were more likely to have a fixed mindset and say "that's not going to work on these kids."

Integrating. Most teachers reported implementing the growth mindset lessons required as part of SOAR and developing some shared understandings amongst groups with respect to these lessons. While these lessons (which were all taught in the first few weeks of school) formed an early attempt to integrate growth mindset language into the experience of both students and teachers, there was little evidence of integrating growth mindset concepts throughout each school. Dialogue and joint action are hallmarks of the integrating stage. While we observed teacher compliance through the implementation of the expected growth mindset lessons for students as well as informally adopting some growth mindset language and practice outside of these lessons, there seemed to be little teacher-led dialogue and joint action surrounding growth mindset.

For the most part, teachers implemented growth mindset lessons as required by the school. A few teachers in all three schools reported that they applied growth mindset practices into their classrooms but this was atypical among the interviewed teachers. Teachers allowed students to make test corrections and made efforts to consider student effort rather than grades alone. For instance, one teacher at Williams states, "I feel like if you're giving effort then you're growing, whereas if you're just shooting for a grade, you're just shooting for a grade. You know, it's like…the difference between cramming and studying." Teachers tended to emphasize that re-doing assignments allows students to learn from their mistakes. One teacher-leader from Hancock explains, "I think allowing students to redo things that they did not do well on…gives them an opportunity to see what they did wrong, see what they can improve on…It also gives students a chance to reflect…so that they can see, well, maybe the next time I have something similar to this, this is what I can do." While most teachers allowed students to make test corrections prior to the growth mindset initiative, a few teachers began this practice upon learning about growth mindset. For instance, a teacher from Hancock stated that she began allowing test corrections because of the "growth mindset deal that I learned from":

> That's actually something that I started last year. So I've been teaching for a long time. This is my 10th year teaching. I've only been doing that specific for all of my stuff, for all homework, all everything, as long as they turn it in on time, they get the grade they get, and then they can fix that, re-turn that in, that's a growth mindset kind of deal that I learned from -- that came from that.

A few teachers at Williams and Hancock report adapting growth mindset practices into their own classrooms beyond the discrete lessons they were asked to teach their students. An English teacher at Williams describes how s/he incorporates growth mindset ideas into her writing lessons:

> I've also been trying to use [growth mindset] with students who say, I cannot write. I don't know what to write, and with – you know, especially with essay assignments. They'll say – and I would just tell them, it's not that you can't write. It's that maybe right now you're not writing as well as you would like to, and that's why we do this now. We're going to do several essays and we're going to get better each time. That's why we do multiple drafts for each essay, and

> I explain why we do it in that context and it seems that they – it makes sense to them, when I explain it in that context.

Similarly, one teacher at Hancock reports how s/he has changed the way she encourages her students during difficult lessons because of growth mindset:

> …as we learn it and as we work it out, you'll start to grow. I don't expect perfection from you from the beginning, so it's — I want you to make mistakes, so that I can see where you're messing up, so that I can know how best to teach you, whereas I used to say, okay, we're going to go over this, and I'm going to tell you right now it's hard, nuh-uh, that right there will shut a student down. It's hard and I know I can't get it. So I've learned how to say things so that the student will be more receptive of taking on something new. And because — because of that, I don't think I have any students that shut down on me.

Although SOAR never explicitly required that teachers implement growth mindset concepts in their content area classes, it appears that some teachers took the lessons about growth mindset and attempted to integrate them into their teaching.

Most teachers at all three schools found the task of translating growth mindset practices to classroom practice challenge. Some struggled with how to balance teaching growth mindset with their content, which teachers saw as more central to their daily instruction. For example, one teacher described this difficulty:

> I don't have a clear enough sense of – of how that mindset can be taught without taking away instructional time. It's – it's sort of mindset – the content of mindset does need to be taught, but in a – it – it has its own context. It is a meta-message about – about how brains work and about how we think and how we approach the content, and it's not content oriented and so it really conflicts with – with the time piece of it, and there was – there was no component on this campus thinking about how this was going to move past that.

Other teachers describe how the mindset itself is difficult to even teach to students: One teacher at Smith, for example, said that teachers need more "tools on how to incorporate [growth mindset]," explaining how:

> …last year it was actually really helpful to have just some phrases, a different way to word things. That's so simple but that is helpful that that is right there in front of me, and I would think other activities that you can do in the classroom, any other – just any other way to apply it, to help me understand how can I incorporate this every day in my classroom

> without dramatically shifting everything – just simple ways, add this in or just do it this way instead, that it – teachers need that...

Teachers, both those leading the implementation of SOAR and others, recognized the importance of a having a common language on growth mindset. This would suggest that at least pockets of teachers in each school thought it was important to have consistent ways of talking about growth mindset throughout the school, an important component of integrating growth mindset into the fabric of the school. As a teacher at Smith explains, "the school really is behind this and it's something that wants to be embedded common language wise, so everyone knows what you're talking about." Similarly, a teacher at Williams explained the importance of common language:

> So we're – the first step that we've done as a – as a school, as a campus, is we're learning how to all speak the same language. We all already, for the most part, say a lot of the same things, but the language that we use to the students hasn't been standardized or collated together, and so that was the first step in what we've done as a campus and just kind of get the kids to start talking about keeping an open mind about things or having a closed mind about things.

While this teacher identifies common language as an important first step to integrating growth mindset into the campus culture, their example of common language ("keeping an open mind about things or having a closed mind about things") is quite generic and does little to reinforce specific growth mindset attitudes.

Indeed, there was little cohesion around how to build common language around growth mindset. One teacher-leader at Williams said that having a common language is "something that we need to work towards…I just don't think that it's embedded yet." Teachers report experiencing some confusion around vocabulary, because "all those acronyms sometimes just kind of make you go blah" and "when you introduce [growth mindset] as a concept, it just becomes another thing to know and another thing to remember, another buzz word, another vocab word." Teachers offered different explanations for why growth mindset language had not caught on. One teacher stated that growth mindset would be better adopted if there were visual posters serving as symbolic

representations to reinforce the concept. Another teacher said the language did not stick because it was not put into practice immediately after the training:

> No, and they did – they did last year, but none of it stuck because it wasn't attached to anything. So it's like listening to a salesman selling a product you're not planning on buying. Everybody, I think just – when I ask teachers about the praise language and the mindset work that was done last year, I've run into maybe three teachers who can tell me anything about the content of what was taught.

Institutionalizing. Though growth mindset lessons at each school were implemented by teachers at all schools, there was little to no evidence that these practices promoting growth mindset were institutionalized through embedded structures, procedures, or strategies that became routines. As one teacher-leader at Williams explained, "I've seen some teachers toss the phrase out there a few times, and I've had some good conversations on my own with a few students […] there's a long distance between anything along the lines that I've seen [and] institutionalization. "Another teacher similarly concludes that "I think it's just the teachers have to embrace [growth mindset] and it needs to be like, ingrained in us so that when we're having those conversations, all of that verbiage comes out, and I think right now it's just so new that like, we don't think about it, you know?".

For our second research question, we examine organizational supports and barriers to moving from one stage of organizational learning to another. While findings for the first research question were generally consistent between schools, we found greater variation between the three schools regarding the supports and barriers that facilitated or hindered movement to a subsequent stage of OL.

Intuiting to Interpreting. The organizational structures that supported teachers' movement from the intuiting to the interpreting stage include professional development, opportunities for reflection, and feedback to and from teachers. Professional development sessions throughout the first year of implementation gave teachers multiple opportunities to be introduced to and reflect on

growth mindset. Hancock and Smith in particular provided ample opportunities in the spring prior to implementation. Teacher-leaders modeled growth mindset lessons for colleagues, where teachers pretended to be students in the classroom. This helped teachers better understand the student perspective on learning about growth and fixed mindsets. The professional development was heavily focused on modeling for teachers what SOAR implementation would look like, including how to teach lessons on growth mindset. One teacher-leader from Hancock said that in modeling lessons, "we actually made the teachers do all the icebreakers and all the activities. After we modeled each lesson, we stopped, asked for feedback. We were collecting data about their comfort level in teaching the lesson and also whether they perceived that lesson will increase SOAR, and then yeah, that's it. So we took a whole afternoon, we modeled every single lesson, how it's going to happen, basically like the first month of school."

Furthermore, teacher-leaders provided some opportunities for teachers to reflect on growth mindset practices during trainings. For instance, teachers at Williams were given a "reflection sheet" which they "could go back and write down questions or thoughts they had or things they were still confused about, and then at the end of the day or at the end of the morning we had about 15 minutes where a [teacher-leader] would walk around to each table and say, okay, ask me questions." At one of their professional development sessions, teachers at Smith H.S. took a quiz to gauge their own mindset. Multiple teachers mentioned this experience in their interviews, with one explaining, "we took the quiz to find out that we had a fixed mindset and it was a little bit of a shock. And so we learned more about what having a growth mindset really means as far as your attitude and how you approach life and learning." These structures helped teachers better process the new knowledge of growth mindset by facilitating reflection (intuiting) and conversation (interpreting) of growth mindset.

For the most part, all three schools offered some opportunities for teachers to connect growth mindset to prior learning and articulate their basic understanding of the concept. One main challenge was time; professional development focused less on intuiting and interpreting, and frequently moved on to training teachers on implementing discrete practices. One teacher at Williams felt s/he did not understand the "why" behind the practices and felt that it was being implemented from the top down, saying:

> I'm a why person, I want to know – what we're headed toward, how we plan to get there, and everybody's got to be involved in that somehow, some way. We've all got to sit down and be together when we talk about it. Instead, what's happening is the four of these people – or however many there are – they just stand up there and present it and we're all sitting there, and there's no questions, there's no involvement from the faculty. It's just, we're delivering the information, this is what you do, and oh, by the way, here's a survey to fill out where we're going to judge you" Some teachers' surface level understanding of growth mindset may be attributed to the limited time available for individual learning of growth mindsets.

Relatedly, two teachers at Hancock said training "was a little rushed" and happened "very quickly. . . Ran like, the very first six weeks, those first lessons right there. Here it is. This is what we're going to do. Click, this is what it is, click, click, click, click, click…" Though some teachers attended the early professional development sessions offered in the spring and summer prior to implementation, others received training just days before having to implement the program. One teacher-leader from Hancock said that there wasn't enough time for teachers to process the learning:

> I think that we need more time to train the teachers. I think the teachers need more training. I feel like it's kind of just been -- Because I was part of the team that trained the teachers at the beginning of the year over the lessons, and I felt that we just had to really rush through it, and that there wasn't a lot of time for reflection. It wasn't a lot of time for processing, and we taught it to them on like a Tuesday or a Wednesday and then we started school on a Monday.

The lack of time provided to all teachers in the intuiting and interpreting stages weakened teacher understanding.

Interpreting to Integrating. Early momentum for the growth mindset training helped the program make steady headway from the onset. Teacher-leaders at Williams and Hancock frontloaded teachers with professional development on growth mindset by providing this training

the year or summer prior to the whole-school implementation of SOAR, which provided teachers the time to discuss growth mindset concepts and practices with colleagues as well as time to understand and model the practices they were being asked to implement prior to sharing the lessons with students. In addition, much of training focused explicitly on how to teach growth mindset lessons and teachers were given very explicit instructions about how to introduce growth mindset to students. One teacher at Hancock expressed appreciation for way training was delivered, saying, "I think they did the right thing this year, in giving us — giving it to us step by step. And the reason I say that is because teachers already have enough preps on their hands." Meanwhile, the principal explained that the training was designed to recreate for teachers the students' experience of the program:

> …we designed the training so that teachers would get an opportunity to actually experience like – like the students would experience it, you know, and so, you know, they went through the student planner, they went through the goal-setting and through the vision and understanding transcripts and report cards and GPA. I mean, they went through that whole afternoon learning what would be expected for them to try out in the first six weeks, and so I think that that was a strong implementation.

The teacher-leaders also provided material supports to teachers to support implementation of growth mindset lessons. These resources helped teachers integrate growth mindset practices without having to fully understand concepts. The resources may also have helped teachers improve their understanding of growth mindset since the resources made the lessons easy to implement, increased teacher accountability to internalize and present the material more quickly, and helped develop some common language by asking teachers to use the language used in the lessons materials. For instance, one teacher said:

> The materials are always readily available and, you know, there's – a lot of times when you try to implement a process there's a lot of pushback, but they'll – they do it all for you. They email it to you, they give you all the PowerPoints or whatever you need. They make all the copies for you so you don't have to spend time doing any of that and so, as far as the presentation and the rollout of that, it's been good.

Another linked receiving materials to rapid implementation, saying, "They gave us a teacher information sheet, what to talk about, read what it's about, the background sheet, and that was literally right after our two-hour training the week before. So it was implemented extremely quickly."

There were a number of structural barriers that made it difficult for individual and groups of teachers to progress from developing language around growth mindset to constructing coordinated action and a shared understanding. Despite the material supports provided by teacher-leaders at each school, teachers did not have sufficient time to develop a collective understanding of growth mindset or discuss why and how to infuse growth mindset into their classrooms. Teachers leading implementation of SOAR recognized that they had not spent sufficient time on integrating growth mindset in the classroom. For example, one teacher-leader from Williams said that teachers "understand it in general. I mean, they understand what growth mindset is…but it's not embedded in their language in their classes." Similarly, another stated, "I would probably say that 85% of the teachers could give you a basic definition of what growth mindset is. Maybe 60% of the teachers would say that they strongly agree with the argument made by the pro-growth mindset folks that it is an important meta-concept for students to hold in their minds, but maybe only 20% of the teachers would say I know ways to implement this in my classroom and I regularly say anything about it." Teacher-leaders at Hancock echoed this sentiment. For instance, one teacher-leader qualified that while she thinks although there is some understanding, it is shallow: "As far as growth mindset, I would say more than a shallow understanding…They're just these buzzwords that everybody likes but they don't actually sincerely enact them in class, yeah. I don't know how many teachers have changed their assessment to kind of fit that type of ideology."

Another barrier to integration of practices were a plethora of competing priorities, initiatives, and responsibilities. According to teachers from Williams H.S., growth mindset language has not

been adopted because it is not the top priority for teachers. One teacher said, "trust me this is not something we sit around in the halls and talk about. We talk about things like there's no printer, you know…" while another articulated that their conversation about growth mindset is limited to faculty meetings where "this is our 30 minutes that's delegated for that, then we do it but it's not anything anybody ever just; we don't have time. And all of us teach at different times and people are off at different times so I mean it's not like people really get an opportunity to meet."

Numerous administrators and teacher-leaders expressed the need for greater reinforcement of practices throughout the year to support both implementation and understanding. For instance, a few teacher-leaders at Smith H.S. emphasized the importance of going deeper, and developing teachers' understanding of the core components of SOAR, particularly growth mindset. One said:

> …it's so important for the next year to go deeper with these instruments, with these tools, because if we don't do this, teachers will be lost, they will forget where we started and the main purpose of everything that's going on. I'm pretty sure there are about 20 percent of the teachers right now who don't know what growth mindset is, and why we are doing all this. '

Although there was a sense among many teachers that growth mindset had been a priority at the beginning of the year, many reported that interest and focus on growth mindset waned over the course of the year. In the second semester of the first year of implementation at Smith H.S. and during the second year of implementation at Williams and Hancock high schools, teachers report that growth mindset was neither explicitly targeted during professional development nor emphasized as a SOAR practice. For instance, one teacher-leader at Williams stated, "we haven't necessarily used the term growth mindset a lot, but it's still – it's still the behind the scenes idea, I think we just sort of backed off the terminology. We haven't focused as much on things like the plasticity of the brain and things like that." Another teacher-leader said that they will "occasionally…talk to the staff about some articles or findings that we've come across that relate to how growth mindset works. But those are not well structured into the classroom's activities. So we have not – I mean, aside from the fact that some language gets tweaked in the six week lessons to be more growth mindset oriented, we've not done

explicit instruction across the school – the school or any targeted subset of the school on growth mindset concepts."

Integrating to Institutionalizing. There was no evidence of organizational structures supporting OL from the integrating to the institutionalizing phase. Though the existence of administrative support and the associated resources may have, in the long term, a positive impact on furthering OL to the institutionalizing stage, at all three schools, administrative and resource support was inconsistent from the start and declined over time.

Stakeholders noted that as support dwindled, it became difficult to integrate and sustain growth mindset practices due to a decrease in professional incentive as well as a shift in leadership priorities to other initiatives. The existence of competing initiatives in particular led teachers to express frustration at the lack of time and energy they had to sustain the growth mindset work. At Hancock, teachers lamented the lack of accountability on growth mindset practices, with on teacher maintaining that there "need to be some campus-wide non-negotiables on the teachers' parts." Another teacher-leader notes that "because the decision-makers [administrators] feel like other things are priority, the things that are going to make our kids lifelong learners get back seated to the temporary things." These other priorities include preparing students for the state test, focusing on teaching content, and implementing a one-to-one laptop initative.

Indeed, many teachers report a fade out of the growth mindset initiative in the second year of implementation, with some teachers noting that initiative was deemphasized by the leadership team over time, and others describing other competing initiatives taking precedence. At Hancock H.S., for example, one teacher says that "we still talk about growth mindset, but as far as implementing growth mindset, I don't think there's been much of a push as this year. It's not that it hasn't been introduced and it hasn't been talked about. It's just I don't see the emphasis as much, you know, and I don't see it reflected in my kids, either." At Smith, one teacher took a cynical view

of administrators using the program to boost school statistics, wondering "how much [administrators are] into [SOAR] for more than just numbers with the school."

There was also a lack of uniformity in school-wide implementation; the flexibility and ambiguity surrounding the program led to varied implementation both within and across schools. For instance, teachers at Hancock describe implementing growth mindsets practices in a variety of ways in their classroom. These include having a "good relationship" their students, making them "free thinkers," and eliciting student feedback. This diversity of ideas about what would constitute growth mindset practices seems to reflect the lack of clarity over how to foster a growth mindset in the classroom. An administrator at Hancock said that students should be seeing the same practices across all classrooms in order to "build a firm foundation," explaining:

> But if you be consistent – school-wide consistency – if a student going to my classroom and go to your class – they should be consistent in what they see and what they do. This gives you a firm foundation of building up and going higher. But if you come to my room and I'm doing something different – and I think this is what we've got a good hold on here, because every advisory class is doing the same thing. So every student is learning and doing the same thing. So when they talk and collaborate with each other, if I'm talking to you about what happened in my advisory class and what happened in your advisory class, we're on the same page, instead of they didn't do it like that, or they did. It builds them up, getting that good, firm foundation, and as they learn to be leaders, then they bring their creativity and what they want to add to it.

VI. Discussion

Findings from our analysis reveal the multifaceted nature of organizational learning in the case of one particular reform effort. In the fledgling stages of SOAR, it appears that teachers began the intuiting and interpreting stages around understanding growth mindset. Individual teachers had distinct understandings of growth mindset as a result of their own prior knowledge and backgrounds, and over time, teachers overall did not develop similar verbiage around describing growth mindset. Despite the fact that not all teachers had a complete understanding of growth mindset prior to putting it into practice, due to school policy, teachers began implementing and

adapting growth mindset language throughout the school year. Factions of teachers were able to establish a common set of language and practices, but this was not widespread. These teachers typically were the ones with a stronger understanding of how to translate the concept of growth mindset into classroom practices and routines. Meanwhile, other teachers continued to develop their understanding of growth mindset during the course of the school year through continued implementation and ongoing training.

Like most reforms in education, this innovation was put into practice long before teachers had a firm grasp of the concepts and material. Instead of waiting until teachers fundamentally understood the concepts before implementing the program, the schools moved rapidly through the intuiting and interpretation stages, and focused on the integration stage. While it is certainly possible for teachers to implement a practice that they do not fully understand, this is likely an unwise strategy. This is a practical dilemma faced by all schools and program developers. On one hand, there is only a finite amount of time available to spend on training before changes must be implemented to improve schools. On the other hand, without strong understanding of the program, the integrity and sustainability of implementation are put at risk. If the purpose of any reform is to permanently shift how the organization and its members—in this case, teachers – think and behave, developing individual and group level understanding is crucial. In this district, interviews with teachers and teacher-leaders suggested that despite providing initial training for teachers on growth mindset, teachers still did not have a sufficient handle on the ideas behind growth mindset to be able to introduce concrete practices in their classrooms or routines throughout the school that would embed growth mindset in the daily activities of teachers and students. Rapidly moving through concepts and providing instruction on implementation is insufficient to facilitate true understanding.

This issue highlights the larger issue in school reform and OL where implementation often jumps to making second order changes in practice as opposed to first order changes in

organizational members' mindsets and understandings. However, OL is going be on shaky ground unless individuals and groups within the organization understand the key concepts, develop a common language, and cohesively form deep rooted routines and practices around the new knowledge. Interestingly, a small handful of teachers recognized the importance of changing teacher mindsets. For instance, a teacher-leader from Williams said: "we probably need to focus on trying to have more of a TOAR—you know, instead of Student Ownership and Responsibility, Teacher Ownership and Responsibility. I quite haven't figured that totally out. But I think some of that has to come from higher up." This statement is telling in many ways. Not only does this teacher astutely recognize the importance of making first order changes, but also indicates that these changes need support from higher tiers of leadership to be successfully implemented.

Given these findings, it was unsurprising that we found only moderate evidence of the integrating stage and almost no evidence of the institutionalizing stage. The few instances of integration and adaptation of practices seemed to stem from compliance to teaching mandatory growth mindset lessons. This was especially evidence at Williams and Hancock High Schools, which had comparatively higher quality implementation and progression through the learning stages. In fact, Smith High School ultimately phased out of the program altogether by spring 2016.

Our examination of the structural supports and barriers to transitioning from one stage to another illuminates the intentional supports required to create mechanisms for learning to occur. Particularly, the structures were indicative of the feedback and feed forward loops that passed information to and from the individual, group, and organizational levels. Structures such as trainings, surveys, and classroom observations by teacher-leaders were informal feed forward cycles that gave teacher-leaders information about the progression of OL at the individual level. For instance, in modeling growth mindset lessons for teachers and providing them time to ask questions and clarifying questions, teacher-leaders gained information on where breakdowns in teachers'

understanding were happening. Contrastingly, in providing training and lesson materials, the organization gave feedback to individuals and groups of teachers in the organization on the expectations and requirements.

VII. Conclusion

While existing studies focus on top-down, externally developed programs, our work draws from a locally-derived, teacher-driven initiative in a large, urban school district. Using the 4I organizational learning framework to ground our study allows us the opportunity to carefully examine the nature of organizational learning as it progresses from the individual to the organizational level. We find substantial evidence that the intuiting and interpreting processes around the understanding of growth mindset occur at the individual teacher level and are primary supported by exposure to growth mindset through teacher-led professional development and the expectation of teaching growth mindset lessons to students. However, there was little to no evidence of integration and institutionalization of growth mindset concepts. This may be attributed to the more surface-level training conducted at the school sites or the project being in its nascent stages.

Our study contributes to the broader literature base on organizational learning and capacity-building in school improvement. First, we utilize the 4I framework, a framework rarely used in studies of organizational learning in schools. Second, using the 4I framework allowed us to capture the multifaceted nature of OL as a progression through stages, and track the learning of three high schools engaging in a contextually sensitive, teacher-led reform. Third, as researchers involved with the design and implementation of the larger-project, we are able to glean patterns not just in the learning outcomes, but also amongst the supports and barriers to learning as a result of school-level efforts.

Nonetheless, this study faces a number of limitations. First, we lack systematic data for group level understanding and implementation of practices. Only teacher-leaders and administrators were required to participate in interview as part of their ongoing work as part of the larger researcher-practitioner partnership. We rely on a convenience sample of other teachers. As such, our teacher sample is likely not representative of all teachers in the school. It is also not possible to aggregate teacher interview data to analyze groups of teachers, such as teachers by content area or grade-level. Consequently, we are limited in our ability to speak to group level understanding and implementation. Second, since teachers were aware that support from the research grant would be discontinued after the second year of program implementation, it is possible that some of the focus of the program shifted to other initiatives for practical purposes. A related issue stemming from the termination of the project is our inability to examine data from a third year of implementation.

Our findings have implications regarding the design, implementation and sustainability of a reform. For practitioners and researchers considering introducing new practices to a school, our findings indicate that careful attention must be paid to providing structured time for teachers to fully make sense of reform concepts prior to integration, with an emphasis on developing a common language and set of core beliefs. Without time for individual understanding, group level understanding—and thus integration---will be challenging. Furthermore, program leaders should make every effort to intentionally create information collection processes during the intuiting, interpreting, and integrating stages. Information collection should center around teacher understanding as a precursor to successful integration. If facilitating routinization of program practices into everyday classroom routines is the goal of a school improvement effort, our findings underscore the importance of professional development, reflection time, material resources, and support from school leaders in the learning process.

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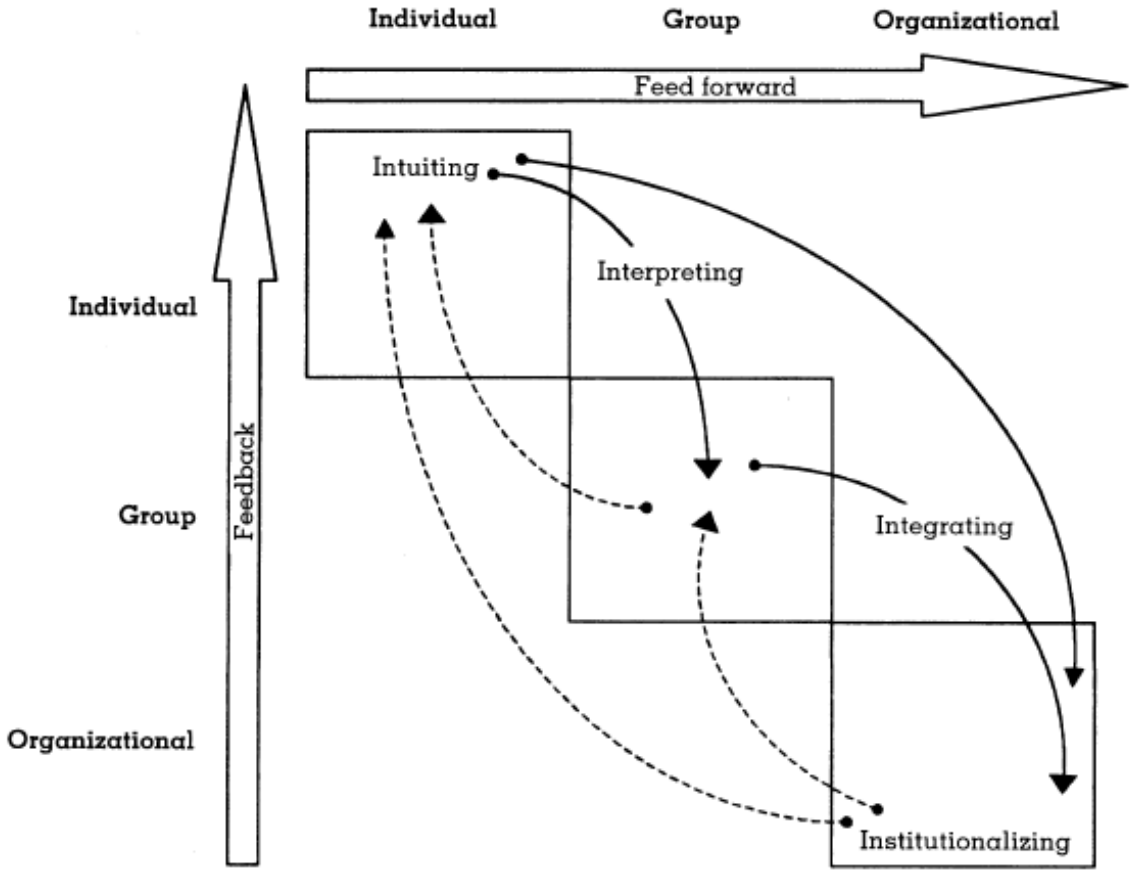
Appendix

FIGURE 1
Organizational Learning As a Dynamic Process



Source: Crossan, Lane, & White, 1999

Table 1. Demographic Profile District & Participating Schools

	District Totals	Williams H.S.	Hancock H.S.	Smith H.S.
Student Demographics				
Total Enrollment	84,360	>1500	<1000	>1500
Enrollment by Race/Ethnicity				
Percent Hispanic	62.8%	40-60%	80-100%	80-100%
Percent African American	22.7%	20-40%	0-20%	0-20%
Percent White	11.0%	20-40%	0-20%	0-20%
Percent Economically Disadvantaged	77.2%	40-60%	80-100%	60-80%
Percent English Language Learners	30.6%	<10%	<10%	>10%
Teacher Demographics				
Total Number of Teachers	5217	>100	<100	>100
Teachers by Race/Ethnicity				
Percent Hispanic	19.5%	0-20%	0-20%	0-20%
Percent African American	22.9%	0-20%	0-20%	0-20%
Percent White	55.9%	80-100%	60-80%	60-80%
Avg. Years of Experience	10.4	10-12	10-12	8-10
Performance Indicators				
4-Year Federal Graduation Rate	79%	80-100%	80-100%	80-100%
English 1 State Test Proficiency Rate	57%	60-80%	40-60%	40-60%
Algebra 1 State Test Proficiency Rate	71%	60-80%	60-80%	60-80%

Source. 2013-14 State Academic Performance Report Data

Note: School names have been changed and data presented in ranges to protect confidentiality.