

Research Article

Navigating the Sociopolitics of Superintendent Change Agent Leadership in Rural School Districts: A Design-Based Approach to Implementing a College and Career Readiness Instructional Improvement Initiative for 21st Century Learners

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Abstract: Supporting the college and career readiness instructional support needs of rural students is a continuing challenge for rural school district superintendents. This article profiles how one rural school district superintendent and his instructional improvement task force colleagues employed a *design research methodological approach* anchored in the improvement science literature to: 1) probe the underlying root causes of their rural high school students' college and career readiness learning deficiencies; and 2) develop and implement a design-based professional development intervention program for the district's secondary educators to address teachers' pedagogical deficit thinking and reinvigorate their college and career readiness-integrated instructional planning and classroom teaching practices. Key insights derived from an analysis of collective design-based instructional improvement efforts completed by change agent leaders in the rural school district case study are presented and discussed within three areas: 1) understanding the unique professional learning needs of educators in rural school districts; 2) using immersive professional learning to expand and energize teachers' data-informed instructional teaming; and 3) nurturing robust district-wide professional learning cultures through cultivating educators' active involvement in ongoing self-reflection, peer coaching, and collegial mentoring. Finally, a set of *design principles* derived from the case study is presented that may be of interest to rural school leaders tasked with finding innovative and practical intervention solutions to persistent teaching and learning improvement challenges in their rural school district communities.

Keywords: Rural school district improvement, college and career readiness preparation, educational design research methodology, teacher deficit thinking, data teaming.

Introduction

Rural school district settings offer fascinating opportunities for studying processes of instructional change and improvement. Because of the unique sets of interrelated organizational, fiscal, personnel, and sociopolitical characteristics that collectively help to define rural school district communities, rural school districts often can become intriguing context-specific case studies in *change agent leadership*. Specifically, rural school district settings can present administrative leaders (superintendents, program directors, campus principals, and other instructional leaders) working in these education environments with distinctive sets of leadership challenges associated with planning for and enacting innovative instructional improvement initiatives that can address the twenty-first-

century learning support needs of rural students. There are multiple inhibiting factors that can constrain change agent leaders seeking to enact substantive instructional improvement in rural school district settings. To begin with, rural school districts are often geographically distant from large urban population centers and lack proximity to large universities and education service centers. As a result, it is often harder for rural school district leaders to form long-term partnerships with faculty and consultants in university colleges of education and regional education support agencies who have expertise in designing customized professional development (PD) programs for rural educators that are focused specifically on instructional improvement strategies that can enhance rural students' secondary and postsecondary learning preparedness.

In addition, rural community settings typically provide rural school districts with fewer opportunities for nurturing collaborative partnerships with small businesses and other commercial organizations, which can be very important in terms of creating real-world-connected learning opportunities for rural students, such as school-to-work training initiatives, professional career mentoring programs, structured internships, and the like. Thus, rural students are often at a disadvantage in comparison with their peers in urban school districts in being able to develop their *social learning capital*—that is, being able to form meaningful, long-term relationships with suitable college and career mentors who can serve as adult role models and advisors to middle and high school students and guide students in their overall real world-connected academic and professional career learning development (Martinez & McGrath, 2014).

The recent literature on leadership for instructional improvement in rural school districts highlights some of the unique challenges confronting instructional leaders seeking to design, develop, and implement targeted improvement initiatives to enhance teaching and learning opportunities for educators and students in rural school classrooms. These improvement challenges besetting rural school district education leaders certainly include but are not limited to: 1) addressing context-specific organizational and instructional dilemmas confronting rural school district superintendents (Howley *et al.*, 2014; McHenry-Sorber & Budge, 2018); 2) building positive school-family-community relationships and fostering authentic learning communities that can support rural students' academic and career learning (Jentz & Murphy, 2005; Budge, 2006; Zacharakis *et al.*, 2008; Cruzeiro & Boone, 2009; Harmon & Schafft, 2009; Ashton & Duncan, 2012); 3) developing strong social capital networks for both rural school leaders (superintendents, campus principals, teachers, etc.) and rural students that can result in access to multiple kinds of rural community resource support (in the form of small community grants, volunteer support, school and program sponsorships, etc.) and can provide students with opportunities to form meaningful relationships with adult mentors to guide students' academic and career development (Agnitsch *et al.*, 2009; Masumoto & Brown-Welty, 2009; Anderson & White, 2011; Lester, 2011; Klar & Brewer, 2014); 4) implementing national and state policy mandates that are often designed primarily for urban school district settings (Morrow, 2012) through identifying creative ways to respond to local contextual needs while simultaneously validating school district policies (Cruzeiro & Morgan, 2009; Schuman, 2010; Latham *et al.*, 2014); 5) providing teaching staff with targeted, relevant professional development programs that can effectively support rural teachers' instructional planning and learning intervention design efforts (Newton & Wallin, 2013; Wallin & Newton, 2013; Klar & Brewer, 2014); 6) developing educators and students' digital literacy skills to enhance students' access to twenty-first-century technology-integrated learning, including robust internet- and social media-enabled collaborative interdisciplinary and project-based networking opportunities (both teacher-student and peer-to-peer) that can enhance students' college and career readiness learning development (McLeod & Lehmann, 2012; Militello & Friend, 2013; Schrum & Levin, 2015; Sheninger, 2014, 2016); 7) creating robust opportunities for educators and students to become involved in both teacher- and student-led immersive deeper learning experiences that can turbocharge teachers' professional planning and enhance students' classroom interactive learning (Borko, 2004; Martinez & McGrath, 2014; Bouwmans *et al.*, 2017; Kameda, 2017; Bradley & Hernandez, 2019; Hernandez *et al.*, 2019; Ottmar, 2019; McTighe & Silver, 2020); 8) navigating the

often complex sociopolitics involved in gaining support from multiple school-district-community stakeholders for the kinds of robust instructional improvement initiatives that are needed to expand twenty-first-century teaching and learning opportunities for rural students (Bacharach & Mundell, 1993; Shaw, 2002; Gerzon, 2006; Bevan, 2011); 9) providing ongoing modeling and mentoring support to help teachers develop and optimize their overall data-informed instructional capacity-building efforts at both campus and district levels (Krečič & Grmek, 2008; Reeves, 2009, 2010; Bambrick-Santoyo, 2012; Stringer, 2013; Lieberman *et al.*, 2014; Ende, 2016; Marzano *et al.*, 2016; Schweitzer & Bailey, 2017; Bambrick-Santoyo, 2019; Widmann & Mulder, 2020) and 10) forming long-term coalitions, networks, and “research-practice partnerships” (RPPs) that can enable education researchers and consultants (operating in universities and/or various kinds of education support agencies, etc.) to work in concert with rural school district leaders to address persistent problems of teaching and learning improvement practice unique to rural district settings (Masumoto & Brown-Welty, 2009; Coburn *et al.*, 2013; Penuel *et al.*, 2015; Coburn & Penuel, 2016; Kunz *et al.*, 2017; Buskey *et al.*, 2018; Rigby *et al.*, 2018; Wargo *et al.*, 2021).

Of the myriad challenges rural district leaders are called upon to confront, one of the most vexing and persistently knotty problems rural superintendents must often deal with is finding creative ways to motivate administrative and instructional staff (campus principals, teachers, instructional coaches, school counselors, etc.) to recognize the *need for instructional change* and to work collaboratively with district leaders to implement creative instructional improvement initiatives that can lead to substantive enhancements to rural students’ K-12 and post-secondary learning opportunities. Often campus principals and teachers (in both rural and urban settings)—particularly veteran educators who have accumulated strong pedagogical beliefs and engrained instructional planning and supervisory practices over many years—can become set in their day-to-day teaching, leading, and learning activities and overall ways of doing things. If not continuously challenged to periodically review and critically evaluate their practices, over time educators can develop entrenched pedagogical beliefs, biased attitudes regarding students’ learning potentials, a lackadaisical stance toward instructional supervision, and an overall unwillingness to change their customary (and comfortably engrained) campus and classroom instructional practices.

These engrained sets of educator pedagogical beliefs, supervisory attitudes, and instructional practices can be particularly troublesome in rural school district settings where rural superintendents typically have fewer resources (smaller numbers of administrative and instructional personnel; limited availability of funding for targeted professional development programming, etc.) compared to their counterparts in urban districts and have fewer opportunities to develop substantive “research-practice partnerships” with district improvement researchers and consultants in universities, regional education service centers, and other education support agencies who can assist rural leaders in designing focused professional development (PD) programs that can address educator intransigence and resistance to change and support rural educators’ long-term data-teaming and instructional development needs. Thus, navigating the complexities associated with the *sociopolitics of instructional change and improvement* can become a very real issue for superintendents interested in turning around instructional complacency among educators in their small district communities and motivating campus-based principals, teachers, and related instructional staff to change their ways of thinking and interacting as they engage together in their day-to-day instructional planning and classroom teaching activities.

Recent conceptual and empirical writings in the area of *educational design research*, part of the general improvement science literature (van den Akker *et al.*, 2006, 2006a; Plomp & Nieveen, 2010; McKenney & Reeves, 2012) provide insight into a very practical methodological approach that school district leaders—including district leaders in rural settings—who are tasked with confronting difficult challenges involving changing educators’ entrenched instructional mindsets and building staff momentum for engaging in the kinds of intensive data-teaming and learning intervention planning that can result in meaningful instructional improvement, can consider adopting to jumpstart

and invigorate their district-wide instructional improvement efforts. The educational design research approach is unique in that it involves education leaders in carefully defining and framing student learning problems within the teaching, leading, and learning contexts associated with the school district setting and then engaging in systematic multi-level analyses of relevant student learning performance data and related educator instructional planning data to identify potential underlying root causes of student learning problems. This root causal analysis process can often result in uncovering distinct problems associated with educators' own professional practice as the data analyses may point to deficit conditions such as: 1) teachers not possessing adequate knowledge, skills, and strategies that can positively inform their data-teaming and instructional planning; 2) teachers not knowing how to effectively integrate current curriculum content knowledge and instructional technologies into their instructional design planning and classroom teaching; as well as perhaps 3) the discovery of deficiencies in educators' own pedagogical beliefs and/or their instructional thinking that may be contributing to teachers' deficit thinking behaviors and instructional planning and classroom teaching practices.

As Plomp (2010) explains, "...educational design research is the systematic study of designing, developing, and evaluating educational interventions (such as programs, teaching-learning strategies and materials, products, and systems) as solutions for complex problems in educational practice, which also aims at advancing our knowledge about the characteristics of these interventions and the processes of designing and developing them. ...By its nature, design research is relevant for educational practice (and therefore also for educational policy) *as it aims to develop research-based solutions for complex problems in educational practice*. [emphasis added] The starting points for design are educational problems for which no or only a few validated principles ('how to do' guidelines or heuristics) are available to structure and support the design and development activities. Informed by prior research and review of relevant literature, researchers in collaboration with practitioners design and develop workable and effective interventions by carefully studying successive versions (or prototypes) of interventions in their target contexts, and in doing so they reflect on their research process with the purpose to produce design principles." (Plomp, 2010, p. 13) Of particular interest is the fact that educational design research, by definition, is focused specifically on identifying complex problems and developing interventions to address these complex problems *in practice*. That is, education leaders, working directly within the organizational and sociopolitical contexts of their own education settings, employ the design research approach and utilize design-based improvement thinking to engage together (guided by a researcher proficient in design-based improvement methods) in systematic analyses of their own school or district data to: 1) investigate both the surface-level symptoms and underlying root causes of persistent teaching, leading, and learning problems; and 2) develop, implement, and evaluate design-based interventions that can directly address the identified problem(s) of practice.

As Plomp (2010) further explains, "Design research by its character aims to be practically relevant. It is initiated to design and develop innovative interventions to meet a need felt in a complex, practical situation for which no ready-made solutions or guidelines are available. Therefore, design researchers aim at developing interventions (such as programs, teaching-learning strategies and materials, products, and systems) that can be used in practice and are empirically underpinned solutions to the problems identified." (Plomp, 2010, p. 22)

Because of its distinctive focus on investigating persistent educational problems as they occur *in context* and developing *context-specific interventions* to address these problems, the educational design research approach and associated design-based improvement methods can constitute especially useful sets of tool and procedures that school leaders can employ within their own organizational settings to engage together in intentional data-teaming and associated root causal analyses to develop targeted program interventions that can produce demonstrable teaching, leading, and learning improvements in their schools and school districts.

Purpose

This article provides a detailed description and analysis of how one superintendent working with education colleagues in a small rural school district employed design-based thinking and root-causal data analysis methods to develop and implement a targeted professional development (PD) intervention program to address secondary educators' deficit thinking and ineffective instructional planning practices in the area of postsecondary learning preparation. The PD intervention program focused specifically on changing high school teachers' collective data-teaming and interdisciplinary planning behaviors in ways that could practically expand and deepen rural students' college and career readiness—integrated learning.

The superintendent and his district improvement task force members utilized one specific design-based thinking and intervention development multi-step process grounded in the overall educational design research approach—the *Design-Based School Improvement Logic Model and Operational Steps Process* developed by Rick Mintrop (2016)—to guide their overall instructional improvement initiative efforts. This process involved the superintendent and his task force in carefully examining and reframing their district's persistent “college and career readiness student learning deficiencies” problem through: 1) engaging in systematic analyses of multiple relevant district data (student-learning assessments, teachers' grade-level data-teaming and interdisciplinary unit planning practices, perspectives collected from teachers on their pedagogical beliefs and attitudes on the role of college and career readiness preparation in the secondary curriculum and how this preparation should be integrated into teachers' team-centered instructional planning and classroom teaching, etc.); and 2) using the results of these data analysis-informed “reframing” efforts to address in an in-depth manner the underlying root causes—involving district educators' own pedagogical mindsets and instructional planning practices—that were fueling the district's “student post-secondary learning deficiencies” problem. Through applying this design research approach, the superintendent and his district improvement task force colleagues were able to develop and implement a multi-week PD intervention program that involved immersing high school teachers directly in iterative sets of team-centered student learning data analyses, critical reflective team conversations, and related peer coaching and collegial mentoring activities. Through participating in these collective PD intervention activities, teachers were able to gain new insights that enabled them to change their pedagogical mindsets and reinvigorate their data-teaming and college and career readiness—integrated instructional planning and teaching practices.

The case study provides the background for an in-depth, literature-informed discussion of how change agent leaders (superintendents, campus principals, and other instructional supervisory personnel) operating in small rural district settings can apply design research concepts and intervention strategies in practical ways to directly address entrenched instructional improvement challenges in their district and, in doing so, nurture robust *collaborative professional learning cultures* for rural educators that can reinvigorate secondary teachers' overall “college and career readiness—integrated” data teaming and instructional planning practices.

Research Methods

The *Design-Based School Improvement Logic Model and Operational Steps Process* developed by Rick Mintrop (2016) served as the framework guiding the design research analytic thinking and intervention program work completed by education leaders in the rural school district case study presented below. The Design-Based School Improvement Logic Model engages school district leaders in exploring and analyzing their organizational and instructional improvement challenges at two distinct levels: 1) reviewing regular school district learning performance data metrics to obtain an initial intuitive, surface-level (*high inference*) understanding of evident student-learning deficiencies; and 2) engaging in systematic deep data dives into multiple kinds of student-learning assessment and educator professional practice data (formative and summative student assessment data, observations of teachers' data-teaming and instructional planning and teaching practices, interview data collected on teachers' self-perspectives regarding their own professional planning and classroom teaching efforts,

etc.) to derive a data analysis–informed refined (*low inference*) understanding of potential underlying, root-causal problem(s) that may be fueling the persistent surface-level student-learning deficiencies.

Employing the Mintrop (2016) Logic Model and Operational Steps Process, school district leaders navigate through seven well-defined steps to fully illuminate their data-informed analytic thinking and operationalize their intervention design development and implementation efforts to address identified learning performance problems. In Step One of the process, district leaders first generate an *initial (high inference) Student-Learning Problem rationale statement* along with an accompanying *intuitive Theory of Action (If/Then) statement* that reflects their grasp of the apparent surface-level student-learning problem(s) currently existing in their school district. District leaders then proceed in Step Two to conduct an in-depth *Exploratory Needs Assessment (ENA)* through carefully examining multiple kinds of relevant data [such as: district and state student-learning accountability performance reports; student-learning benchmark and progress monitoring assessments; observational data associated with teachers' grade-level professional learning community (PLC) instructional planning meetings; classroom teaching evaluations conducted by campus- and district-level instructional supervisors (principals, district curriculum directors, etc.); interview data obtained on teachers' pedagogical attitudes and beliefs and self-perspectives regarding the effectiveness of their instructional planning strategies; etc.]. Through engaging in this in-depth ENA investigative work, school leaders can identify distinct areas of strength and weakness in their district's overall teaching, learning, and education personnel support practices which can then provide the data-supported basis for generating a data-informed and school improvement literature-supported articulation of a refined (*low inference*) Problem of Professional Practice that may be existing in their district (Step Three). This refined Problem of Professional Practice statement can provide new data-informed insights into one or more potential underlying "root causes" fueling the district's surface-level student-learning deficiencies, including root causes that can be traced to problems associated with educators' own data-teaming, lesson planning, and related instructional practices.

In the subsequent steps of the process, district leaders then proceed to generate a full "composite understanding" of the refined (*low inference*) Problem of Professional Practice in its full dimensionality through identifying multiple factors in their district context that can help explain *why* the student-learning performance problems and underlying root causes of those student-learning problems are occurring in their district (Step 4). District leaders then work to develop summary reviews of relevant knowledge bases related to the district's specific instructional improvement problems (Step five) and generate a refined Theory of Action (If / Then) Statement that articulates in practical terms the specific intervention strategies they need to implement that can lead to improvements in teaching, leading, and learning performance in the district (Step Six).

Finally, in Step Seven of the process district leaders construct a Change Drivers Diagram that provides a clear visual representation of how district leaders will apply key intervention strategies culled from the school improvement literatures reviewed to address the identified low-inference Problem of Professional Practice and positively advance educators' professional learning. Using their Change Drivers Diagram as a guide, district leaders then proceed to develop an *intervention program implementation plan* that includes a detailed timeframe and sets of iterative activities that educators will participate in to gain new content knowledge and skills to enhance their collective data-teaming and instructional practices.

The Mintrop (2016) *Design-Based School Improvement Logic Model and Operational Steps Process* was used as the educational design research method employed in the rural school district case study described in the following section.

Rural School District Improvement Case Study

This section presents a summary overview of the collective improvement efforts engaged in by a new superintendent and his team of education leaders in a small rural school district setting to address the

“college and career readiness” preparation needs of the district’s rural students. The case study below provides a narrative description of the context-specific organizational and socio-political challenges confronting the rural district superintendent in dealing with the district’s student-learning deficiencies. In addition, the case study narrative includes a detailed explication of the *design-based analytic thinking* and *professional development (PD) program intervention development and implementation activities* the superintendent and his instructional improvement task force engaged in to investigate and address underlying, root-causal problem(s) of professional practice that were identified by task force members to be causing and fueling the “college and career readiness” student preparation and support issues persisting in the district. Pseudonyms are used in describing the school district and all rural educators involved in the case situation.

Case Study: College and Career Readiness Instructional Capacity–Building in Bedlow-Morton Independent School District

Initial Framing of Bedlow-Morton Independent School District’s Student-Learning Problem

Dr. Matt Huntington has been an educator in Bedlow-Morton Independent School District for twenty-five years. Bedlow-Morton ISD, a small rural school district located in the south-central panhandle of Texas in the United States, is the largest local employer in a small city consisting of area cotton farmers and small business owners who take great pride in the ability of Bedlow-Morton schools to effectively educate their children. From the earliest days of his educational career as a science teacher and department chairperson, Dr. Huntington has always been passionate about providing *leadership for instructional improvement* to meet the academic and career learning needs of his students. His successful efforts through his time as secondary teacher and department chair and then as principal of the district’s only high school solidified his reputation in the Bedlow-Morton community and among school board members as a change agent–oriented and student-centered instructional improvement leader who has the best interests of the community’s students at heart. Thus, it was no surprise to anyone when the school board unanimously approved his bid to become superintendent of the district in May 2020.

As the district’s new superintendent, Matt Huntington spent considerable time during his initial months on the job carefully reviewing the district’s student-learning performance accountability reports for the past several years and immediately perceived an alarming pattern of low student-learning performance ratings on key state performance indicators. The performance rating that was most alarming to Huntington was the high school “college and career readiness” student-learning performance indicator. The state of Texas issues yearly Texas Academic Performance Reports (TAPR) for each campus in school districts throughout the state that provide performance scores on four teaching and learning performance accountability dimensions, namely: Student Achievement, Student Progress, Closing Performance Gaps, and Postsecondary Readiness. Bedlow-Morton High School’s “post-secondary college and career readiness” TAPR report scores were considerably below the state’s overall average and clearly indicated that Bedlow-Morton ISD educators were doing an inadequate job of instructionally preparing the district’s students to be able to succeed academically in college and in post-secondary careers.

Matt Huntington knew from his review of his district’s performance accountability ratings that his rural district students’ deficiencies in their “college and career learning preparedness” had to be addressed. To tackle this student-learning problem, Matt sensed that he needed to help teachers learn how to utilize and integrate twenty-first-century digital teaching and learning tools (instructional software applications, internet-enabled communication technologies, web-based learning resources, etc.) into their instructional planning and classroom teaching and assessment practices. Helping teachers learn how to engage in meaningful “*technology-integrated* instructional planning and classroom teaching to support students’ twenty-first-century learning” to ensure rural students are being properly prepared for college and multiple career paths would need to be Matt Huntington’s instructional leadership priority as Bedlow-Morton ISD’s new superintendent of schools. Thus, in his first year as superintendent, Matt

proceeded, with input from key campus-level administrators and teachers in the district, to design and implement a district-wide *technology-integrated instructional improvement initiative* that all district principals and teachers would be required to implement on their campuses.

A key thrust of this new initiative was to provide teachers in the district—particularly, secondary teachers at the middle and high school campuses—with targeted professional development to help teachers learn how to effectively integrate “internet-enabled instructional technologies and related digital communication and learning tools” into their instructional planning and classroom teaching practices to better address the “college and career readiness” preparation needs of students. To get the “technology-integrated instructional improvement” initiative approved and funded by the school board, in April 2021 Superintendent Huntington had made a compelling argument to Bedlow-Morton ISD school board members for the urgent need for the initiative. Superintendent Huntington argued that, as a small rural school district, Bedlow-Morton ISD education leaders needed to: 1) be proactive in staying up to speed with increasing instructional improvement mandates from the state’s education agency requiring local school districts to incorporate technology purposefully into elementary and secondary curricula; and 2) work intentionally to assist students and teachers in becoming comfortable with utilizing twenty-first-century internet-enabled technology tools to facilitate their own individual and peer learning and to help ensure that the district’s rural students are fully “college and career ready”.

Although the rollout of the “technology-integrated instructional improvement” initiative was welcomed and warmly embraced by students and parents in this small rural school district community, the principal and other instructional leaders at the high school campus soon began to experience some of the multiple implementation speed bumps and supervisory headaches that can accompany such a “district-mandated” technology integration initiative, including *digital equity* problems that can arise when students may not have home internet service or easy access to Wi-Fi connectivity in the community. Of course, having successfully planned and implemented other, albeit smaller-scale, instructional improvement initiatives while serving as a grade-level team leader and department chair earlier in his career, Matt Huntington knew that simply designing and then implementing this new district-wide instructional improvement initiative was not the only challenge he would be facing. In addition to being aware of the multiple digital access and equity challenges Bedlow-Morton educators had to contend with at the campus level, superintendent Huntington also knew he had to brace himself to deal with the “sociopolitical turmoil” that can often arise at the macro-organizational level when seeking to implement such a large-scale district-wide initiative. Superintendent Huntington knew he would have to work proactively with multiple school district community stakeholders—some of whom might have differing views regarding the “idea” of requiring a new technology-integrated instructional improvement focus for the district’s teachers as well as varying perspectives on how to best go about implementing such an initiative—to build *district-wide community support* to enact meaningful, technology-integrated instructional change and improvement in his small, tight-knit rural school district.

Matt Huntington’s transition into the district superintendency role created a vacuum of principal leadership at the high school campus. To fill this void, very shortly after Huntington was approved as the new superintendent, the long-serving middle school principal, Sam Jenkins, quickly stepped forward and was approved by the board to take over as principal of the high school campus. Principal Jenkins and his wife have strong roots in their rural community and are close friends with several Bedlow-Morton school board members. While an effective “discipline manager” and “status quo” administrator of the middle school campus, principal Jenkins does not share the same degree of passion and enthusiasm for “change agent–driven instructional improvement” that personifies the leadership style of superintendent Huntington.

Principal Jenkins is essentially more of an “administrative position opportunist” who simply wanted to fill an administrative void created by Huntington’s ascendency to the superintendent role. Jenkins, in

fact, is very much the kind of “status quo manager” who does not want to “rock the boat” or “get teachers upset” by imposing any additional professional development (PD) and/or technology training sessions on teaching staff beyond the minimum required for state compliance reporting. Principal Jenkins prefers to “keep things steady” and is very conscious of not wanting to alienate or incense any of the many veteran teachers in the district—particularly since there are a substantial number of veteran teachers at the high school who were already adamantly opposed to superintendent Huntington’s improvement initiative because it would create a whole lot of additional work for teachers. These teachers would have to attend and participate in multiple PDs to learn about the newest, web-based instructional planning and teaching tools and how to integrate these instructional technology tools and resources into their weekly planning and teaching practices—additional work that these veteran teachers considered to be unnecessary and a waste of their valuable limited time. So, as high school principal, Jenkins did not do anything to proactively support the new superintendent’s “technology-integrated instructional improvement” initiative, only giving superintendent Huntington “lip service” to his technology-integrated instructional improvement ideas. As a result, several of the politically savvy and outspoken veteran high school teachers, not seeing any strong instructional improvement leadership on the part of principal Jenkins, proceeded to complain to multiple school board members, accusing the new superintendent of “overstepping his instructional oversight reach”. Their clear intent was to create some political turmoil in board meetings to make life particularly difficult for the new superintendent and get him to cave in and abandon implementing his new “technology-integrated instructional improvement” district-wide initiative.

The administrative shuffling occurring in the district in conjunction with the political backlash being generated by the district’s veteran teachers who were reacting negatively to any district-wide changes that would upset their “status quo teaching practices” complicated the instructional improvement *change-agent leadership dilemma* confronting superintendent Huntington. After spending time reflecting on the multiple instructional improvement challenges as well as the considerable sociopolitical complexities that were being precipitated by his newly proposed district-wide “technology-integrated instructional improvement” initiative, superintendent Huntington, using his best organizational leadership insights at the time, formulated the following **initial (high-inference) Student-Learning Problem rationale statements** to guide his school district teaching and learning improvement intervention thinking: *Bedlow-Morton School District’s students are not developing critical thinking abilities and acquiring the necessary academic skills to be properly prepared to succeed in future college and career paths because of the lack of effective technology-integrated instructional planning and classroom teaching practices being utilized by the district’s teachers.*

As a result, Bedlow-Morton School District’s secondary (high school) students are continuing to demonstrate low overall academic performance as measured by the state’s “college and career readiness” student-learning performance indicator and are in urgent need of postsecondary-focused learning support. Following from this initial (high-inference) Student-Learning Problem rationale, Huntington then generated the following **intuitive If/Then statement**: *If Bedlow-Morton School District provides teachers with targeted professional development to assist teachers in gaining the proper knowledge and applied skills on how to effectively integrate twenty-first-century digital and web-based instructional planning and teaching tools into their classroom practices, then Bedlow-Morton students will become motivated to use technology to enhance both their individual and peer-to-peer learning and will demonstrate improved academic preparedness on state assessment measures of college and career readiness.*

Matt Huntington’s organizational leadership instincts told him that he needed to move forward very aggressively to develop an “intervention plan” to address his district’s identified “college and career readiness” student-learning performance problem. Since the district’s financial resources for providing targeted professional development to teachers were limited, Matt contacted instructional improvement consultants at the Texas Education Agency’s nearest regional Education Service

Center for guidance and recommendations on identifying and delivering relevant PD support programs to Bedlow-Morton district educators in the area of “technology-integrated instructional planning to support students’ college and career readiness learning development”.

Refined Reframing of Bedlow-Morton’s Student-Learning Problem as a Context-Specific Problem of Professional Practice

Superintendent Huntington secured the services of a team of instructional improvement consultants from the regional Education Service Center (ESC) who worked with Huntington and the district’s high school principal to plan and deliver during spring 2021 a series of professional development (PD) sessions for the district’s high school teachers. The PD sessions delivered by the ESC consultants focused on “understanding and integrating instructional technology tools and resources into teachers’ collaborative instructional planning and classroom teaching” to enhance secondary students’ college and career readiness development. Superintendent Huntington was encouraged by reports from the high school principal that the teachers seemed to be generally receptive to the PD sessions and appreciated the knowledge and skills they were obtaining on available internet-enabled instructional technology teaching and learning tools and how teachers could incorporate these tools into their instructional planning and classroom teaching practices. However, despite these initial signs pointing to a potential positive impact on teachers’ instructional practices, Huntington observed in the months following the ESC PD sessions intervention that the district’s “post-secondary college and career readiness” Texas Academic Performance Report (TAPR) scores (reflecting students’ degree of preparation for post-secondary learning and career success following graduation from high school) did not show any demonstrable improvement and still remained considerably below the state’s overall average. Since Matt Huntington clearly understood that the decisive measure of the *real impact* of the targeted PD intervention would be on whether or not the instructional technology integration knowledge and skills teachers were obtaining through the PD sessions would positively affect students’ capacities for increased college and career readiness learning development and ultimately lead to higher “post-secondary college and career readiness” performance accountability ratings on the district’s TAPR reports, Matt knew that the Education Service Center PD sessions implemented in his rural district in spring 2021—while perhaps useful as an initial intervention effort—did not prove to be effective in helping Matt achieve his primary goal, i.e., transforming the overall ***instructional planning and classroom teaching and learning culture*** of the district.

Disappointed by the results of the PD intervention, Matt recalibrated his district improvement strategizing and decided to form a district-level ***instructional improvement task force*** whose job would be to investigate the district’s “college and career readiness” student-learning performance problem at a much more granular level through intensive data analysis and root-causal probing. The instructional improvement task force Superintendent Huntington put together consisted of the high school principal, the department chairs of each of the major content areas (English/language arts, mathematics, science, and social studies), the district’s secondary-level instructional coach, and the secondary guidance counselor, with Matt serving as the task force’s operational leader. Matt charged his newly appointed instructional improvement task force to work collaboratively with him in an in-depth manner to collect and analyze all possible relevant data that could help Matt and his task force colleagues identify what could be some potential *underlying root causes* fueling the district’s persistent (and thus far intractable) “college and career readiness” student-learning performance problem.

Data Analysis and Literature Review Activities. Matt and his instructional improvement task force colleagues started their work by engaging in several initial planning meetings to brainstorm and identify possible relevant kinds of data that team members could begin to collect and analyze to help them piece together a more comprehensive picture of the state of the overall ***instructional planning and classroom teaching and learning culture*** currently existing in the district. Matt and his colleagues surmised that through intentionally delving more deeply into and examining various additional data sources (beyond just the district’s standard measures of student learning outcomes and the state’s performance accountability ratings)—data that seemed logically related to and could perhaps serve as

meaningful indicators of the robustness and effectiveness of teachers' instructional planning and of the overall quality of the teaching and learning culture existing within the district, careful analyses of these additional data sources could perhaps enable task force members to gain a more complete picture of some organizational factors that could be contributing to and perpetuating the district's persistent "college and career readiness" student-learning problem. More specifically, Matt and his task force members felt that conducting deep dives into multiple observational and perspectivist data associated with teachers' own instructional teaming and planning practices could potentially yield some new and valuable data-informed insights into one or more potential *underlying root causes* (at an "educator professional practice" level) that could be fueling their district's persistent "college and career readiness" student-learning performance problem—root causes that heretofore had eluded them. By engaging in a systematic process of analyzing multiple relevant data sets and data streams that seemed relevant and potentially interrelated, Matt and his task force speculated that they might be able to eventually zoom in on and isolate at a deep-structural level one or more potential context-specific, overarching Problems of Practice involving the *adult educators* in the district—that is, one or more *Problems of Professional Practice* that in some way might involve underlying pedagogical thinking and/or collaborative teaming processes associated with educators' own instructional planning and classroom teaching practices that went beyond readily apparent surface-level "technology integration" challenges.

Utilizing **Exploratory Needs Assessment (ENA) investigation techniques** developed by Rick Mintrop (2016), Matt and his colleagues collected multiple kinds of data on teachers' instructional teaming and planning practices at the high school campus. These data included: 1) examples of instructional unit plans created by ninth- through twelfth-grade teacher grade-level interdisciplinary planning teams; 2) available ninth- through twelfth-grade benchmark data generated from student learning formative assessments completed over multiple nine-week cycles; 3) task force members' written notes from observations of teachers' grade-level professional learning community (PLC) instructional planning meetings; and 4) task force members' written notes from classroom observations of teachers in each of the four major content areas (English/language arts, mathematics, science, and social studies). In addition, task force members conducted informal interviews with multiple teachers (with various content specializations) at the high school campus to solicit teachers' own views and perspectives on their current interdisciplinary instructional planning thinking and teaming strategies and the self-perceived impact of their collective planning efforts on classroom teaching and learning practices and, specifically, on the "college and career readiness" learning development of their students.

Matt and his task force leveraged their ENA investigative efforts as an analytic window through which they could brainstorm and identify some potential "key factors" that they believed could be operating as possible *underlying root causes* of their district's persistent "college and career readiness" student-learning performance problem. After extensive discussion of their collective ENA data analysis results, Matt and his task force colleagues were able to identify four "**key factors**" that they believed were impacting their high school teachers' Problem of Professional Practice situation. These four key factors were: 1) teachers have to worry about the overall number of students meeting the minimum passing standard on state standardized tests and are unable to focus on the scores of students who are at-risk of not meeting that standard; 2) teachers feel as if they can trust the top students to reach the necessary minimum standard on state standardized tests by teaching them the same as other students without challenging these top students to strive for a higher standard of expectations; 3) teachers fail to create differentiated instruction that challenges all students academically and meets all students' learning support needs, instead sticking to their own comfort zone and what works best for them in their classroom instructional practices; and 4) teachers do not create correlations between/among lesson content and delivery that let their students know they are being prepared for college entrance exams and college-level learning and that students can succeed at that level of rigor and academic expectation.

The identification of these four “key factors” represented an insightful “aha moment” for Matt and his task force colleagues in that they were now able to more tightly focus their investigative efforts on pinpointing in a systematic, data-informed way a possible overarching context-specific **Problem of Professional Practice** underlying their surface-level student-learning problem—a problem of professional practice that could shed light on specific underlying root-causal *instructional improvement challenges* directly involving Bedlow-Morton school district’s own educators.

Following the identification of these four key factors, Matt and his task force members then proceeded to review pertinent literatures that they felt might support and help inform their root-causal analytic thinking. The knowledge bases reviewed included the literatures on creating and sustaining a shared vision of teaching and learning for student success in K-12 school district organizations. In conjunction with this literature, task force members also carefully reviewed recent literature on developing professional growth mindsets, specifically reviewing literature on addressing deficit thinking and entrenched deficit mindsets of organization members. In addition, task force members reviewed current practitioner literature on “instructional team capacity-building” highlighting concepts and strategies for building educators’ overall instructional planning competency and teaming capacity for developing and implementing interdisciplinary instructional units in their classrooms that can challenge students to expand their real-world applied thinking and result in enhanced levels of high-engagement deeper learning. Finally, task force members reviewed the most recent literature on instructional supervision to glean insights on how campus and district leaders can expand their instructional supervisory toolkits to include academic content-specific interactive communication and coaching best practices to structure meaningful supervisory conversations with teachers that can support teachers’ continuous professional learning and instructional improvement and promote positive student learning.

Problem Reframing. Upon completing their review of these literatures, Matt and his instructional improvement task force were able to generate the following **refined (low inference) context-specific Problem of Professional Practice rationale**: *Bedlow-Morton School District lacks a fully articulated, aligned curriculum and associated instructional planning systems that are carefully designed to provide the kind of integrated framework, foundation, and appropriate yearly growth that must be present to enable rigorous learning that prepares graduates for college and adult careers. Moreover, the high school teachers do not have the necessary knowledge and skills to effectively differentiate instruction and provide the appropriate academic rigor and learning challenges to help prepare college- and career-ready graduates.*

Following from this refined (low inference) Problem of Professional Practice rationale, Matt and his task force colleagues then generated the following **refined Theory of Action (If/Then) statement**: *IF I and other district and campus personnel work with teachers to: 1) increase teachers’ knowledge of and competence in utilizing instructional strategies that best meet the college preparedness needs of students in rural schools; 2) help teachers create challenging content and lessons that correlate with college entrance exam questions and material and lead to higher levels of student growth and academic knowledge that correspond with more advanced scores on state standardized assessments; and 3) provide greater levels of encouragement to students to take dual credit college courses while in high school, THEN teachers, with their campus administrators’ instructional supervisory support, will succeed in developing higher numbers of students who attend and complete degrees at four-year colleges and universities.*

Leveraging the above problem reframing logic, instructional improvement task force members were then able to generate a **Bedlow-Morton School District Change Drivers Diagram** (see Figure 1) depicting the task force’s identified underlying, root-causal *context-specific Problem of Professional Practice* and the data-supported *change drivers* that would need to be implemented to realize the desired *Professional Learning Improvement Goal* in their rural school district.

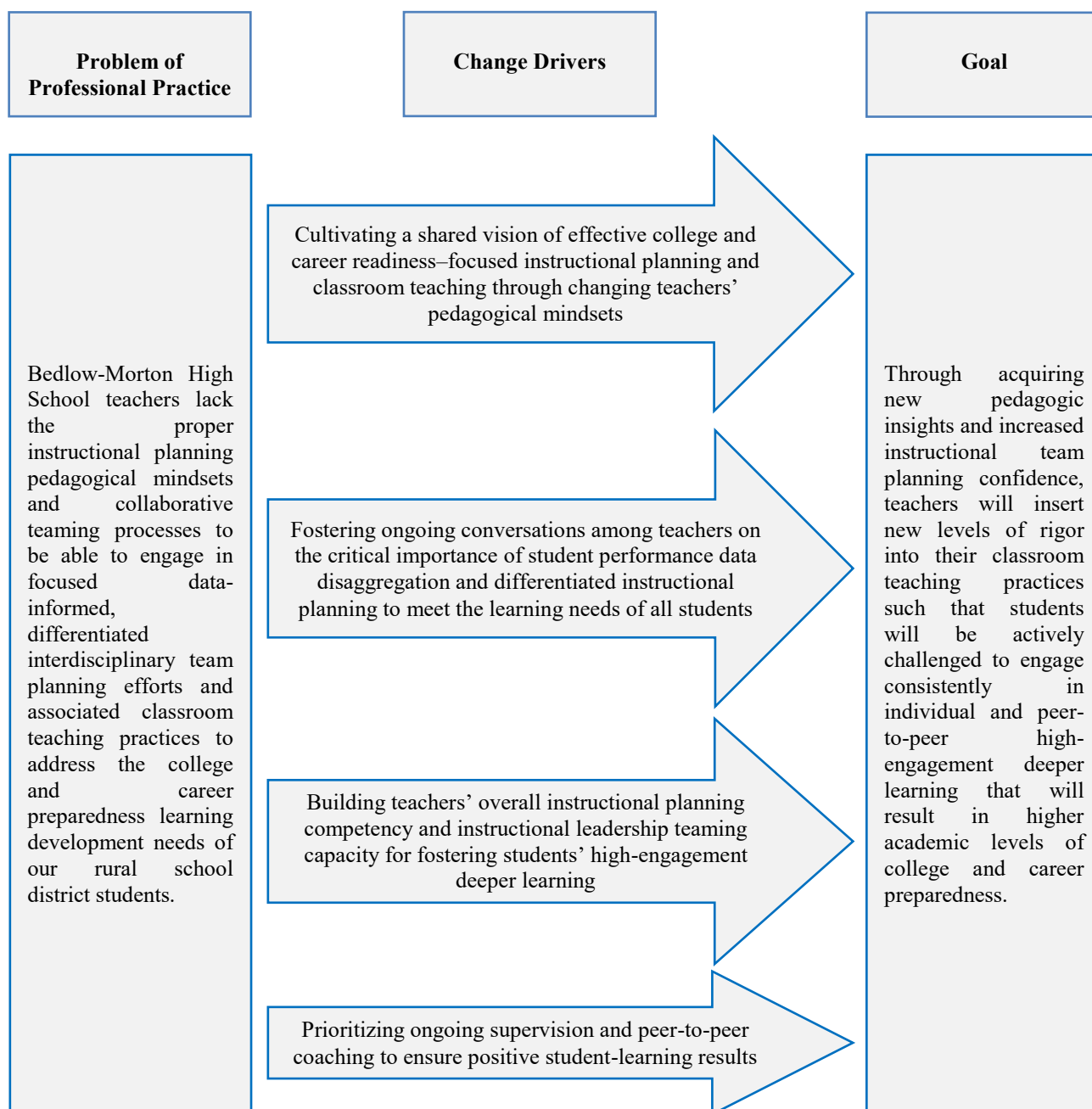


Figure 1. Bedlow-Morton School District Change Drivers Diagram

Intervention Design Development

Armed with the above design-based school improvement analytic logic, Matt and his instructional improvement task force colleagues were then able to identify four specific *change drivers* to guide their district instructional improvement intervention efforts. These change drivers were formulated to address directly the *underlying root causes* of their school district's identified "context-specific Problem of Professional Practice". These four change drivers would enable Matt and his task force to focus on developing and implementing professional learning activities that would help educators: 1) acquire important knowledge and skills related to disaggregating and analyzing student performance data; 2) design and implement differentiated instructional units; 3) build their overall capacities for engaging in collaborative instructional planning and fostering high-engagement deeper learning environments in their classrooms; and 4) embrace ongoing authentic, proactive instructional supervision and peer-to-peer coaching as top priorities for ensuring positive student-learning performance outcomes. The **first change driver** focuses on helping teachers learn how to develop a shared vision of what effective college and career readiness-focused instructional planning and classroom teaching and learning should look like. Importantly, a carefully developed shared vision of

this kind will require that teachers engage in self-examination and possible recalibration of their own teaching and learning attitudes and beliefs to ensure that teachers have the appropriate pedagogical mindsets conducive to supporting authentic *college and career readiness-centered* instructional planning. The literature on creating and sustaining a shared vision of teaching and learning improvement for student success in K-12 school organizations is clear in emphasizing the importance of cultivating educators' *instructional team-learning capacities* as an intentional means to: 1) empowering educators to be able to chart a clear direction on how to reach their instructional improvement goals; and 2) strengthening the overall teaching, leading, and learning culture of any campus or school district (Stringer, 2013; Martinez & McGrath, 2014; Fullan, 2016). To engender any real, sustainable change in educators' instructional planning and teaching practices and positively enhance the teaching and learning culture of an individual campus as well as of an entire school district, education leaders need to work proactively to change educators' *professional mindsets* from a basic "survival mode" mindset to a "team-centered instructional improvement" mindset. Change agent leaders working at both the campus and district levels need to focus on nurturing authentic collaborative, team-centered instructional improvement mindsets among all educators involved—professional mindsets that put the focus directly on *student learning enhancement* as the desired goal, rather than simply ensuring teachers' survival in the classroom (Dweck, 2016; Murphy, 2016).

The **second change driver** highlights the need to foster professional conversations among teachers on the critical importance of engaging in continuous student performance data disaggregation and differentiated instructional planning as part of their collaborative team planning activities to meet the learning needs of all students (Wayman & Stringfield, 2006; Datnow *et al.*, 2008; Love *et al.*, 2008; Mandinach & Honey, 2008; Love, 2009; Blanc *et al.*, 2010; Boudett *et al.*, 2010; Venables, 2011; White, 2011; Mandinach, 2012; Mandinach & Jackson, 2012; Bernhardt, 2013; Bowers *et al.*, 2014; Datnow & Park, 2014; Venables, 2014; Kennedy & Jones, 2015). Education leaders can help teachers become familiar with available web-based social media collaboration tools and resources (such as: Google Docs, LinkedIn, Microsoft Teams, etc.) that can enable teachers to connect and share data disaggregation/analysis and differentiated instructional planning techniques, strategies, and best practices to enhance their instructional teaming efforts. Encouraging and supporting teachers in leveraging these kinds of web-based collaboration tools and resources can increase teachers' instructional teaming capacities in designing, developing, and implementing targeted instructional units that can greatly expand and deepen students' high-engagement deeper learning—particularly in the area of enhancing students' overall "college and career readiness-focused" interdisciplinary learning development (McLeod & Lehmann, 2012; Militello & Friend, 2013; Sheninger, 2014; Schrum & Levin, 2015; Sheninger, 2016).

The **third change driver** is building teachers' overall instructional planning competency and instructional leadership teaming capacity for fostering students' high-engagement deeper learning (Stringer, 2013; Martinez & McGrath, 2014; Murphy, 2016; McTighe & Silver, 2020). Developing technology-integrated interdisciplinary units and classroom web-supported teaching and learning activities that challenge students to become involved directly in authentic *immersive inquiry* (through problem-based learning and related hands-on learning projects, flipped classrooms, etc.) are excellent instructional development strategies for expanding students' opportunities and capacities for high-engagement deeper learning (Martinez & McGrath, 2014; Sheninger, 2014; Schrum & Levin, 2015; Sheninger, 2016; Lee, 2018; Winter, 2018; Stratton *et al.*, 2020). Involving students in well-planned immersive learning activities that incorporate robust levels of web-integrated peer-to-peer sharing and learning opportunities enables students to "take ownership in" and broaden and deepen their own interconnected learning development. Furthermore, doing so motivates students to creatively explore how they can push the limits of their own interactive learning capabilities and expand their *social capital* through engaging in creative "learning partnerships" with others, such as through direct peer-to-peer project-based teaming with their classmates and other teachers (both within and outside their school district) as well as through forming "extended career-learning partnerships" with local and

regional education entities (such as libraries, museums, STEM learning centers, etc.) and business community mentors (Martinez & McGrath, 2016; Hernandez *et al.*, 2019).

Finally, the **fourth change driver** emphasizes the need for educators to prioritize the importance of engaging in authentic, ongoing instructional supervision and peer-to-peer coaching practices to support their own and their colleagues' optimal professional learning and instructional improvement and to ensure positive student-learning performance results. Instructional leaders (campus principals, assistant principals, grade-level teacher team leaders, instructional coaches, etc.) can foster an overall culture of proactive instructional supervision and support on their campuses and in their school districts through engaging in a wide range of instructional supervisory and peer-to-peer learning activities. These activities can include but are not limited to: 1) observing and participating in weekly Professional Learning Community (PLC) student data analysis and instructional planning meetings with teachers; 2) informally observing teaching and learning in classrooms and providing formative supervisory assessment feedback to teachers during post-observation conferences; 3) ensuring that teachers have multiple opportunities to benefit from well-designed and relevant professional development (PD) programs as well as engage together in designing and implementing their own "teacher-customized" PD programs; and 4) encouraging teachers to develop their own ongoing, peer-to-peer collegial learning and support practices that help expand teachers' collaborative sharing and internalizing of creative instructional planning and learning intervention best practices (Dufour *et al.*, 2004; Dufour & Fullan, 2013; Stringer, 2013; Dufour *et al.*, 2016; Ende, 2016).

Using their Change Drivers Diagram as a "directional roadmap" to guide their district improvement operational thinking, Matt and his instructional improvement task force colleagues then proceeded to develop a very focused, context-specific **District Instructional Improvement Intervention Program "Implementation Plan"** consisting of multiple, iterative sets of content and activity interactive professional development (PD) modules to guide Bedlow-Morton educators' change driver-informed professional learning (see Table 1).

Table 1. Bedlow-Morton School District Instructional Improvement Intervention Program "Implementation Plan"

Week	Format	Content/Activity
1	Meetings of all selected participants	<p>Introducing key concepts:</p> <ul style="list-style-type: none"> • What are college readiness standards? • What type of material is covered on college entrance exams? • How are questions phrased on college entrance exams? • How can college readiness standards be incorporated into and aligned with the high school curriculum? • How can this be integrated into classroom teaching and learning? <p>Analyzing strategies for instruction:</p> <ul style="list-style-type: none"> • What teaching strategies do college professors use and how can we incorporate them into our class structures? • What types of activities are used to differentiate student learning to ensure mastery of the content? • How can the presentation of the material be differentiated to provide different opportunities for students to engage with the content? • Do our teachers have the pedagogical and content knowledge to present lessons at this challenge and

		<p>rigor level?</p> <ul style="list-style-type: none"> How can we instill the necessary confidence in our teachers to teach classes at a college-level intensity?
2	Meetings of all selected participants	<p>Root causal analysis and selection of curriculum that is aligned with college readiness practices:</p> <ul style="list-style-type: none"> How are data collected to show the effectiveness of rigorous and challenging curriculum on student performance on higher-level thinking exams? How can disaggregated data analysis results be utilized to enable teachers to design creative instructional units that can best meet the college and career readiness-integrated differentiated learning needs of students? How can data be used to determine if all students are meeting college-readiness standards? How can we articulate a curriculum that fosters rigorous, higher-level thinking? Teachers will gain a level of comfort with the aligned curriculum, instructional strategies, and activities that will be employed by all teachers as part of this initiative. Teachers will participate in an immersive, data-driven team learning project on how to engage effectively in instructional data-teaming that involves disaggregation and analysis of student data to uncover the root causes of students' learning deficiencies and improve students' learning.
3 and 4	Classroom observations and peer coaching by volunteer participants	<p>Teachers conducting peer-to-peer observations of fellow teachers focused on instructional strategies that are rigorous and challenging and that include information from college entrance exams</p> <ul style="list-style-type: none"> Teachers are paired into co-partner teams to engage in multiple classroom observation and peer coaching cycles to examine teachers' effectiveness in applying their newly acquired content knowledge and differentiated instructional strategies to their classroom teaching practices. Teachers also observe students to identify successful instructional strategies and activities that engage students in deeper learning.
3 and 4	Individual interview meetings	<p>Sharing feedback on observations that shows the academic growth of all students due to challenging, college preparedness instruction and materials that push all students to achieve academic growth</p>

Bedlow-Morton instructional improvement task force members served as session facilitators and coaches for each of the weekly series of meetings and activities included in the professional development (PD) intervention program (see Table 1). Two high school teachers from each of the four major content areas: English/language arts, mathematics, science, and social studies were selected to participate in the intervention program. The first week of PD intervention program implementation focused on introducing teacher participants to key concepts and processes driving *college and career readiness preparation* at the secondary level. During these initial sessions, task force facilitators led

interactive conversations with teacher participants that centered on: 1) reviewing college readiness standards and the structure and content emphases typically included in college entrance exams; 2) reflecting on the nature and qualities of a “postsecondary-encompassing pedagogical mindset” that is conducive to engendering the kind of effective secondary instructional planning and teaching that can enhance college and career readiness preparation in students; and 3) focusing in on the specific interdisciplinary content knowledge and differentiated instructional planning skills high school teachers need to possess in order to design, develop, and deliver creative, immersive instructional units that can stimulate students’ curiosity and promote high-engagement deeper learning.

During the second week of the intervention program, teachers participated in multiple focused conversations with PD facilitators on how to develop curricular components that are aligned with current college and career readiness curriculum practices. These conversations centered on helping teachers gain more informed understandings and practical skills in how to work together in grade-level teams to systematically analyze student-learning performance data and leverage the results of these analyses to design rigorous interdisciplinary instructional units that can challenge students academically and expand their higher-level critical thinking. Importantly, PD facilitators worked during this second week to assist teachers in internalizing the fundamental connections between/among a properly aligned curriculum, the use of creative instructional design strategies, and the development of differentiated student-learning assessments as integrated intentional means for building teachers’ positive *college and career readiness–integrated instructional teaming capacity*.

Weeks three and four of the PD intervention program focused on two main professional learning activities. The first activity involved teachers in participating in an immersive collaborative learning project to explore how to engage in instructional data-teaming to disaggregate and analyze student data to uncover the root causes of students’ learning deficiencies and design targeted differentiated instructional interventions to improve students’ “college and career ready interdisciplinary learning”. The second activity involved PD facilitators and peer coaches in conducting multiple observations of teachers’ classroom teaching followed by post-observation collegial conversations with these teachers to provide teachers with multiple opportunities to: 1) reflect on their own classroom-based teaching behaviors; and 2) help teachers critically self-reflect on the extent to which they were being successful in integrating the “college and career readiness preparation” knowledge, differentiated data-teaming analysis processes, and instructional planning skills and strategies highlighted during the various PD sessions into their overall instructional practices.

Matt and his task force colleagues were keenly interested in observing the effects of the PD modules on teachers as they navigated through the four-week PD intervention program. One of the most intriguing revelations that emerged from the iterative PD intervention implementation process was how the intentional efforts of the PD facilitators in helping teachers connect the dots between the quality and precision of their disaggregated student learning assessment data analyses and their abilities to leverage data analytic results to inform their collaborative instructional planning practices began to noticeably expand and deepen teachers’ *data-informed pedagogical thinking* as well as their overall enthusiasm for engaging in the data-teaming instructional planning process. Teachers participating in the PD intervention program seemed to be affected most noticeably by their involvement in the *root causal analysis* activities they engaged in during the second week of the intervention program along with the follow-up classroom observations and peer coaching sessions teachers were involved in during the third and fourth weeks of the PD intervention program. As they were led through the root causal analysis immersive-learning process by the PD facilitators, teachers began to discover for themselves how engaging together in systematic, multi-leveled analyses of student-learning performance assessment data can enable teachers to uncover previously unknown root causes that could be fueling and driving students’ learning deficiencies. Moreover, teachers began to identify specific underlying root causes of students’ learning problems that did not stem from students’ “learning limitations” per se but were actually being caused by teachers’ own *pedagogical deficit thinking* regarding students’ learning potentials and teachers’ shortcomings in not

knowing how to fully integrate college and career readiness—integrated *content* and deeper learning instructional *strategies* into their interdisciplinary unit designs. As one teacher explained: *To be perfectly honest, I was quite skeptical coming into these PD sessions. Being a veteran social studies teacher, I firmly believe that over the years I and my teacher colleagues have developed some very well-honed instructional planning strategies for ensuring students' successful assimilation of content as well as stimulating their higher-order thinking abilities. However, the PD sessions that immersed us in deep data digs to further investigate some of the deepest, not easily seen, root causes of students' less-than-stellar learning performance on instructional unit assessments became eye-opening moments for me. Discovering real evidence that pointed to my own lack of effectiveness in being able to creatively develop and fully integrate college and career readiness-centered content into unit planning and, particularly, evidence of my own deficit thinking in underestimating the higher-order thinking capabilities of my students have caused me to realize that I need to spend more time examining and reflecting on my own instructional practices and the underlying beliefs that drive 'how I think' and 'what I do' on a daily basis in both my instructional planning and my classroom teaching. In addition, participating in the classroom teaching observations and peer-coaching activities further confirmed for me the importance of spending substantial amounts of planning time working to create a variety of 'differentiated learning opportunities' for students—opportunities that fully integrate college and career readiness-centered content into project-based learning units and assessments, as students' own learning capabilities can be enhanced when they are provided with multiple immersive, deeper-learning experiences, including peer-to-peer learning that is project-based and interactive and that incorporates multiple ways for students to become directly involved in exploring their own deeper learning potential.*

Design-Based School District Improvement Results and Findings

The process and impact data Matt and his task force colleagues collected during the four-week PD intervention program implementation period provided some positive evidence that the task force's multi-component *instructional improvement intervention design* had produced some discernible changes in participating Bedlow-Morton School District teachers' college and career readiness—focused pedagogical thinking and instructional planning behaviors. This suggested that the overall PD intervention program was effective in addressing the root-causal Problem of Professional Practice Matt and his task force had identified (i.e., *Bedlow-Morton School District lacks a fully articulated, aligned curriculum and associated instructional planning systems that are carefully designed to provide the kind of integrated framework, foundation, and appropriate yearly growth that must be present to enable rigorous learning that prepares graduates for college and adult careers. Moreover, the high school teachers do not have the necessary knowledge and skills to effectively differentiate instruction and provide the appropriate academic rigor and learning challenges to help prepare college- and career-ready graduates.*). Matt and his task force colleagues' collective analyses of PD implementation process data enabled the generation of some discernible **Design-Based School Improvement Results and Findings** associated with this rural school district instructional improvement case study. In terms of observable professional learning benefits accruing to teachers who participated in the four-week PD intervention program, the following **design research results** were identified. First, participating teachers' exposure during the PD sessions to learning how to properly analyze students' disaggregated learning-performance data and leverage the results of their collective data analyses to design creative instructional units that have the potential to meet the college and career readiness—integrated differentiated learning needs of their students proved to be a “high-value” professional learning experience for teachers. Through their involvement in PD session disaggregated data analysis activities, teachers developed a more enhanced appreciation of the *additive value of disaggregated data analysis* as a critically important component of teachers' overall data-teaming practices. Second, the peer-to-peer classroom observations and follow-up peer debriefing and coaching activities teachers engaged in during the intervention program expanded teachers' individual and collective awareness of the positive observable effect the incorporation of *well-designed differentiated instructional strategies into classroom teaching practices* (such as: involving students in the creation of student-designed and student-led college and career readiness—

integrated learning projects; encouraging students to explore and utilize available web-based content and internet-enabled interactive communication tools to expand their learning horizons, etc.) can have on motivating students to want to participate actively in classroom interactive learning activities and increasing students' overall higher-order thinking and deeper learning engagement levels. Third, teachers' overall involvement in the iterative PD sessions in conjunction with their active participation in the teacher peer-to-peer classroom observation and follow-up peer coaching activities precipitated in teachers a new degree of *team-enabled critical self-reflection* that teachers had heretofore not experienced. This resulted in teachers developing a more experience-informed appreciation of the positive effects peer observations and coaching can have on contributing to the ongoing refinement of teachers' overall instructional planning and classroom teaching practices.

Collectively, the above case study results led to some intriguing professional learning outcomes (i.e., **design research findings**) associated with the design-based instructional improvement intervention program implemented in this rural school district. One intriguing overarching finding that emerged from teachers' collective participation in the multi-week professional development sessions was the recognition by all involved of the *transformative power of immersive professional learning* in motivating teachers to intentionally self-reflect on their long-held (sometimes entrenched) pedagogical beliefs and instructional practices and begin to change these beliefs and practices when confronted with powerful new, interactive team-learning experiences. Through their involvement in the PD sessions and related classroom observation and peer coaching activities, teachers were able to: 1) broaden their perspectives and professional skillsets on how to go about properly integrating instructional content material into a fully aligned "college and career readiness-centered" curriculum; and through this process 2) gain new insights on how to instructionally operationalize a fully aligned curriculum in effective ways through engaging together in focused "disaggregated data analysis-informed" instructional unit team planning. A second major finding that emerged from this case study was the collective realization among the superintendent, task force instructional improvement intervention program designers, PD facilitators, and participating teachers that the intentional application of design-based improvement thinking and intervention program development as described in the improvement science literature (Plomp & Nieveen, 2010; Mintrop, 2016) can: 1) provide a *useful organizing structure* for involving district personnel in meaningful multi-level data analysis activities that can help stakeholders pinpoint the underlying root causes of students' learning performance problems; 2) enable personnel to design, develop, and implement *creative, multi-component PD intervention programs* to directly address teachers' own entrenched problems of professional practice that are often fueling students' surface-level learning deficiencies; and 3) serve as an *energizing catalyst* for changing educators' pedagogical thinking in positive ways and improving their overall instructional practices. Thus, the design-based instructional improvement process engaged in by the superintendent and instructional improvement task force in the above Bedlow-Morton School District case study afforded these rural school district leaders with a new root-causal analytic lens and set of design-based intervention program development and implementation procedures to: 1) refine their district improvement efforts to focus more directly on teachers' own deficit pedagogical thinking and their limited instructional planning practices; and 2) design and implement a creative PD intervention program that could directly immerse teachers in new kinds of "college and career readiness-integrated" professional learning having the potential to reinvigorate teachers' data-informed instructional team planning and classroom teaching efforts.

Discussion

This section provides a literature-informed discussion of key insights that emerged from the Rural School District Case Study profiled above. The discussion below is organized into three sections dealing with: 1) understanding the unique professional learning needs of educators in rural school districts; 2) using immersive professional learning to expand and energize teachers' data-informed instructional teaming; and 3) nurturing robust district-wide professional learning cultures through cultivating educators' active involvement in ongoing self-reflection, peer coaching, and collegial mentoring. In addition, a set of *design principles* culled from the case study's collective results and

findings is also presented. These design principles may be of practical use to rural school district leaders interested in exploring how to integrate educational design research methods into their ongoing rural school district improvement efforts as an intentional means to develop and implement design-based instructional interventions that can provide substantive learning improvement opportunities for both teaching staff and students.

Understanding and Addressing the Unique Professional Learning Needs of Educators in Rural School Districts

Rural school districts in the United States have unique challenges and needs when compared to districts situated in urban contexts. Due to their smaller student populations, rural school districts often cannot apply for the kinds of federal and state funding that urban school districts can obtain to fund their education programs. As a result, rural district students are not able to benefit from the kinds of diverse curricula and co-curricular programs that are readily available to students in large urban districts. In addition, due to limitations imposed by their geographic isolation, rural school districts often cannot easily develop long-term *collaborative partnerships* with other education entities (such as universities, education service centers, science academies, museums, cultural centers, etc.) that can be critically important in providing students with opportunities to enroll in college-credit courses while in high school and expanding students' access to enhanced STEM (science, technology, engineering, and math) and STEAM (science, technology, engineering, art, and math) interdisciplinary learning. Moreover, rural school districts' lack of proximity to large urban centers often creates additional challenges for rural students (compared to students in urban areas) in that rural students cannot as easily develop relationships with adult mentors working in professional fields and thus tend to have a somewhat more limited reach in terms of being able to cultivate meaningful *social capital learning networks* that can significantly expand opportunities for potential internship placements and long-term career learning. As a result, in comparison with their urban peers, students in rural school districts typically have access to fewer readily available *community-connected* learning and growth opportunities, which translates overall into substantive learning inequities for rural district students.

Educators working in rural school districts also must deal with the limited professional learning and growth opportunities that can beset small districts located in geographic areas far from urban population centers. The relatively small number of teachers that typically comprise the education staff in rural school districts along with the fact that many very small rural school districts are a "limited-campus operation" (i.e., kindergarten through twelfth grades are all contained in one or maybe two physical buildings) greatly reduces the available options rural teachers have for obtaining critical professional learning support, both in their initial years of teaching and as they progress in their classroom teaching careers. As a result, rural teachers do not have the kind of access to multiple "professional learning mentors" (veteran teachers who can serve as senior guides and coaches to newly hired teachers and teachers new to the profession) as do teachers working in large urban districts and, thus, are at a disadvantage as they strive to build their own professional learning networks. Additionally, due to limited funding resources, rural school districts must deal with the ongoing challenge of finding creative ways to provide appropriate professional development (PD) programs to their teaching staff—PD programs that are customized in ways that can realistically address the context-specific instructional support needs of teachers planning and teaching in rural classrooms. Because rural school districts are often geographically isolated and at a significant distance from universities and education service centers usually located in and around urban centers, it is often difficult to find and connect with education faculty in universities who are interested in partnering with rural school districts to develop customized PD programs that can effectively meet the context-specific professional learning needs of rural educators. As a result, district leaders must work harder and be much more intentional in creating the kinds of context-specific, job-embedded PD programs for their education personnel that can provide teachers with opportunities to expand their professional toolkits through obtaining up-to-date content knowledge and creative teaching strategies that can enhance their overall instructional teaming capacities. In this regard, developing "customized PD programs" for rural teachers is an especially valuable design strategy that rural district leaders must utilize to support

the practical professional learning and growth needs of their teachers and increase teacher retention in their rural districts.

The Bedlow-Morton case study profiled in this article offers one example of how rural school district leaders interested in enhancing the post-secondary learning prospects of their students can partner with a university-based school district improvement researcher to support rural district leaders' instructional improvement design thinking. The intervention initiative development efforts detailed in the Bedlow-Morton case study highlight how rural school district leaders—with guidance from a university-based researcher and school district improvement consultant—can work together in new ways to develop and implement a unique ***college and career readiness instructional improvement initiative*** that leverages design-based improvement principles along with a carefully articulated instructional improvement intervention program “implementation plan” to broaden teachers' professional learning through providing teachers with new content knowledge and instructional planning strategies to better support their students' *college and career readiness—integrated learning*. The PD intervention program developed and implemented by Bedlow-Morton school district instructional improvement task force members included multiple immersive learning activities and feedback/coaching cycles for teachers participating in the intervention program that were focused on immersing teachers directly in systematic analyses of their own students' assessment data. These immersive data analysis experiences enabled teachers to: 1) gain new data-informed insights regarding the underlying root causes of students' learning deficiencies; and 2) expand teachers' instructional planning toolkits with additional unit planning and follow-up learning support strategies to better address the specific college and career readiness learning needs of their rural students. Thus, Bedlow-Morton school district leaders were able to leverage the power of *design-based instructional improvement thinking* and *immersive-learning intervention plan development* to provide Bedlow-Morton high school teachers with structured, job-embedded instructional capacity-building opportunities to explore their students' college and career readiness learning performance data through a more probing analytic lens and, through doing so, critically examine and revitalize their own instructional team planning and teaching practices.

Tapping into the Power of Immersive Professional Learning to Expand and Energize Teachers' Data-Informed Instructional Teaming

An intriguing feature of design-based improvement thinking is that this approach allows change agent leaders to incorporate multiple opportunities for education personnel participating in an intervention program's various PD modules to engage together in highly immersive professional learning experiences. This kind of *immersive professional learning*, if carefully designed and implemented, can serve to disrupt participants' familiar ways of thinking about their work and can challenge participants to scrutinize and interact with relevant data in new ways and at deeper analytic levels that go beyond their routine practices. The effects of “direct immersion” professional learning were clearly evident in the post-intervention interviews conducted with high school teachers who participated in the Bedlow-Morton PD intervention program. During the second week of the intervention program, Bedlow-Morton teachers participated in an “immersive team-learning project” designed to help teachers learn how to engage together in focused instructional data-teaming. Project activities involved the teachers in systematically disaggregating and analyzing multiple student assessment data sets to investigate and identify potential underlying root causes that could be fueling students' learning deficiencies. In informal interview debriefing sessions with PD facilitators following this team-learning project, teachers were very forthcoming in sharing how their perspectives on student data analysis and the process of data-teaming in general changed as the week's project activities unfolded. As one tenth-grade math teacher commented: *I'm used to looking at student performance data. I routinely review students' nine-week assessment data to get a feel for how students are grasping key math concepts and to gauge the kinds of repeat teaching I may need to do to help ensure all students are correctly internalizing the new math content and skills I'm teaching. I'm also accustomed to iteratively looking at student data to check for student levels of content knowledge and skill acquisition in the interdisciplinary units I'm collaboratively involved in designing and delivering with other grade-level content teachers. So, going into this 'data-teaming*

project' I did not expect to learn anything new. I already felt that I had a firm grasp of the learning needs of my students based on my routine review of their assessment data. But the 'deep data digs' we did during the data-teaming project began to change my thinking about how well I really knew my students. The multiple deep dives into students' disaggregated data began to shed new light on how some students were, in fact, not fully internalizing new content and skills as well as other groups of students. And perhaps the most startling insight that emerged from these collective deep data analyses for my teacher colleagues and me was that the 'cause' of this uneven learning across groups of students could not be traced to any discernible fault or learning defect in the students. The only logical explanation for the disparities in students' learning performance was that we, as teachers, were evidently not working hard enough to engage in systematic deep data analyses on a regular basis and then use the results of our analyses to design truly differentiated instructional units that could meet the learning support needs of each and every student. The post-project reflections of this math teacher along with similar reflective comments proffered by other teacher participants in the PD intervention program's immersive team-learning project activities provide strong evidence for how structuring focused opportunities for teachers to become *directly immersed* in systematic deep data digs of students' disaggregated assessment data and then carefully reflect on the results of these data analyses can cause teachers to reevaluate the assumptions they make about students' learning abilities as well as their own instructional planning practices. Because of the time constraints and pressure associated with weekly instructional planning and classroom teaching, teachers can often make inaccurate inferences about their students' learning capabilities based on only a surface-level familiarity with student performance data. However, when teachers are provided with guidance on how to engage together in systematic deep data digs of disaggregated assessment data to carefully analyze their students' demonstrated learning, teachers can generate new data-informed analytic insights about their students and their individual learning challenges. These new insights, in turn, can directly inform teachers as they go about working more intentionally in their instructional planning to design, develop, and implement targeted instructional lessons and interdisciplinary units along with more focused learning interventions that are better customized to address individual students' specific learning support needs.

When considered in the context of teachers' own self-reflections on the new, expanded insights they were able to glean about the data-informed *underlying root causes* of students' learning deficiencies when teachers became actively engaged in immersive team-learning experiences to analyze student learning performance data at deeper levels, the new insights these teachers were able to generate strongly suggest how structuring "immersive learning opportunities" for teachers can incentivize and accelerate teachers' *collaborative capacity* for continuous professional learning and improvement. Indeed, designing structured opportunities for teachers to engage together in immersive team-learning experiences can be a powerful strategy school district leaders (in both rural and urban settings) can utilize to enhance *collaborative instructional capacity-building* among their education personnel. Root causal analyses of students' disaggregated data, like the kind engaged in by teacher participants in the Bedlow-Morton PD intervention program, can help teachers *link together* their instructional unit planning, assessment design, and student learning performance data analysis practices in more concrete ways. Through their participation in these kinds of root causal analysis activities, teachers can form new conceptual and operational connections regarding how they: 1) design and implement lessons; 2) create assessments to gauge student assimilation of content; and then 3) leverage the results of their review of assessment data to develop follow-up, targeted learning interventions that can more accurately address individual students' specific learning support needs. Thus, integrating *immersive team-learning experiences* that include structured opportunities for teachers to become directly involved in root causal analyses of student disaggregated learning performance data (such as the team-learning activities described in the Bedlow-Morton case study) into a school district's overall professional learning culture can be a primary instructional improvement tool that change agent leaders can employ to jumpstart and invigorate educators' instructional team capacity-building in their districts.

Joseph Murphy (2016) articulates well the intriguing *interrelationships* that exist among instructional planning, teaching, assessment, and student learning and how all these activities can be linked together to create and build authentic “instructional capacity” in schools and school districts. As Murphy explains: “The intermediate point between productive assessment and student learning is more informed, more responsive, and more effective teaching. More specifically, research on teacher perceptions reveals that well-grounded assessment systems lead to a number of improved conditions. There is an increased sense of clarity about teaching, a stronger sense of focus in general and an enhanced focus on student learning and success in particular (Lachat & Smith, 2005; Stringfield *et al.*, 2016). Professionalism grows (Wayman & Stringfield, 2006) and, as Datnow *et al.*, (2008) explain, ‘[S]tudies indicate that effective use of data ... enhances the ability of schools to become learning organizations’ [emphasis added]. ... The use of data to identify needs is associated with more and better responses to those needs (Wayman & Stringfield, 2006). This includes increases in expectations and more appropriate diversification and differentiation of instruction, including more productive use of student groups. Concomitantly, highly functional data systems allow teachers to discern their effectiveness with greater clarity and validity (Supovitz & Klein, 2003).” (Murphy, 2016, p. 130) Results of post-project interviews conducted with teacher participants along with related PD implementation process data collected and analyzed as part of the Bedlow-Morton case study provide some positive support for how school district leaders can significantly enhance their instructional improvement efforts through working intentionally to carefully design and integrate multiple opportunities for teachers to engage in authentic, intensive *immersive data-teaming experiences* as part of their weekly instructional planning activities. If properly structured and implemented, these kinds of team-learning experiences have the potential to: 1) broaden and deepen educators’ insights into the real, data-informed learning support needs of their students; and 2) challenge teachers to reevaluate the validity of their own pedagogical assumptions and the overall effectiveness of their instructional planning and classroom teaching practices.

Nurturing a Robust District-Wide Culture that Encourages Educators’ Continuous Critical Self-Reflection and Professional Renewal Anchored in Structured Opportunities for Peer-to-Peer Instructional Coaching and Collegial Mentoring

One of the most striking results emerging from the PD intervention program’s implementation was the noticeable impact teachers’ involvement in the multiple peer-to-peer classroom observation and follow-up peer coaching activities (during the third and fourth weeks of the intervention program) had on their own professional learning mindsets. The high school teachers participating in these peer-to-peer learning activities clearly relished opportunities to apply the new content knowledge, instructional planning, and classroom-based motivational teaching skills they had internalized during the first two weeks of the intervention program and to debrief with each other on the extent to which they could successfully integrate these new knowledge and skills into their instructional practices. However, teachers’ propensities for engaging in *critical self-reflection* on their own teaching practices when provided with coaching feedback from their peers were not automatic and only evolved gradually as teachers became more comfortable with the peer review and feedback process as the observation and coaching cycles progressed. As one eleventh-grade English/Language Arts teacher participant in the intervention program explained to PD facilitators: *I must admit I was very skeptical at first about the peer observations and coaching activities. I’ve been teaching English/Language Arts for over twenty years, and I feel like I’ve been quite successful over the years in developing and refining creative teaching strategies that can stimulate students to engage together in active classroom learning. So, going into the peer observation and coaching sessions I did not really expect to receive any specific feedback from other teachers that would make me want to question or change my current instructional practices. At this point in my career, I view myself as a highly competent educator who is generally very effective in providing my students with exposure to the content knowledge they need to master to be successful in high school and beyond. But as the sessions progressed, my perspectives began to change. Up to this point, I believed that I was already quite competent in integrating ‘college and career readiness–centered content’ into my instructional units and helping my students see how the literature reading and writing projects we are doing are*

filled with opportunities that can help students make multiple real-world connections to both their present and future academic and career learning. However, given the new knowledge and skillsets on how to utilize results of disaggregated data analyses to plan truly differentiated ‘college and career readiness–integrated’ lessons we were acquiring during the initial PD sessions coupled with the subsequent classroom observational feedback I was receiving from my teacher peer-coaching partner, I began to realize that my abilities in being able to design and engage students in authentic project-based learning activities that could stimulate their higher-order thinking were not as demonstrably effective as they could be. The feedback I received from my coaching partner was sobering—but it also caused me to begin to reflect in new ways about my classroom planning and teaching practices. I now realize that my own ‘assumptions’ about the quality of students’ engagement levels were somewhat biased and were not necessarily reflective of what was actually happening in my classroom. I now better understand that designing lessons that can engage students in authentic deeper-learning experiences requires a substantive amount of intentional planning and refining efforts on my part. I need to become much more intentional about how I design and implement lessons in ways that can genuinely motivate students to ‘want’ to expand their own real-world, college and career–connected learning.

The above English/Language Arts teacher’s candid perspectives on the *mental shift in thinking* she experienced through her participation in the iterative PD intervention program activities mirrored similar shifts that occurred in other teacher participants’ thinking as well. The kinds of immersive learning experiences participating teachers were exposed to during the PD intervention (i.e., teachers’ acquisition of new “college and career readiness” content knowledge in conjunction with developing new skillsets in the areas of disaggregated data analysis and integrated interdisciplinary unit planning, along with follow-up opportunities to be observed and gain valuable feedback from peers on the extent to which teachers were able to apply these new knowledge and skills in their classrooms) served as a catalyst to jumpstart teachers’ critical self-reflection regarding their own instructional planning and teaching practices. The classroom observation and peer coaching cycles, in particular, spurred teachers to reflect in new ways about how their own pedagogical mindsets (i.e., how teachers think about and approach the *process* of classroom teaching and learning) and instructional practices (i.e., teachers’ actual instructional planning and classroom strategies *toolkits*), if not continually monitored and questioned, can become stagnant and entrenched over time. The peer observation and coaching activities challenged teachers to engage both individually and together in new kinds of *team-enabled critical self-reflection* about their own pedagogical thinking and classroom teaching that resulted in teachers broadening their own perspectives and gaining a more informed appreciation of the degree of *intentional thinking and planning* that is needed to design robust “college and career readiness–integrated” instructional units and structure interactive classroom learning environments that can motivate students to want to explore their own college and career–integrated deeper learning. Moreover, teachers’ involvement in this kind of collaborative inquiry about their own instructional practices via the peer observation and coaching cycles is a process that is both *additive* and *reinforcing*. As teachers become increasingly comfortable over time in engaging in collegial mentoring and the overall peer-coaching process, teachers begin to internalize and build on each other’s shared insights and, as a result, teachers’ collective investment in the professional learning culture–building process grows. Thus, challenging educators to reflect on their own pedagogical mindsets and routine instructional behaviors through carefully designed immersive professional learning programs (such as the PD intervention program implemented by district change leaders in the Bedlow-Morton School District case study) can serve as a powerful catalyst for incentivizing educators to: 1) reevaluate their accustomed ways of working; and 2) learn how to *think different and work together in new ways* to recalibrate and reenergize their instructional-teaming practices.

Learning how to “think different and work together in new ways” requires that organization members, such as educators in school districts, adopt a *growth mindset* regarding their professional practices. As teaching, leading, and learning organizations, school districts are naturally well suited to internalizing this kind of “growth mindset philosophy” and school district leaders can reap

positive dividends for their education personnel through investing in developing and sustaining robust professional learning cultures that encourage educators to continuously reflect on their day-to-day work and take constructive action to improve their instructional practices. The “learning payoffs” to organization members of intentionally embracing a growth mindset in their professional work activities can be significant to both individuals and personnel teams. As Carol Dweck (2016), a leading proponent of the growth mindset philosophy, explains: “People with a growth mindset are constantly monitoring what’s going on, but their internal monologue is not about judging themselves and others in this way. Certainly, they’re sensitive to positive and negative information, but they’re attuned to its implications for learning and constructive action: What can I learn from this? How can I improve? How can I help my partner do this better?” (Dweck, 2016, p. 225) Additionally, Dweck emphasizes the important distinction between individuals harboring a “fixed mindset” versus those open to developing a “growth mindset”, a distinction anchored in the inherent differences between assuming a “judgmental” versus a “collaborative learning and support” mental approach to learning. Individuals harboring a fixed mindset tend toward maintaining an overall intelligence level that is static (preferring to “look smart” rather than explore new learning possibilities), avoid challenges, get defensive or give up easily in the face of obstacles, see any expenditure of sustained effort to grow or improve as fruitless or worse, ignore useful criticism and negative feedback, and feel threatened by the success of others. As a result, individuals with a fixed mindset tend to plateau early in their lives and careers and tend to achieve less than their full potential. In contrast, individuals exhibiting a growth mindset believe their intelligence can be developed (have a desire to continually explore new avenues for learning), embrace challenges, persist in the face of setbacks, see effort as the path to mastery, learn from criticism, and find lessons and inspiration in the success of others. As a result, individuals with a growth mindset reach ever-higher levels of achievement in their personal and professional work (Dweck, 2016, p. 263). Using this “fixed” versus “growth” mindset dichotomy as a conceptual framework to operationalize her “change mindset” approach to achieving success and reaching one’s full potential for development, Dweck elucidates how individuals can work to change their overall success mindset from one that is “fixed” to one that is “growth oriented”: “Mindset change is not about picking up a few pointers here and there. It’s about seeing things in a new way. When people—couples, coaches and athletes, managers and workers, parents and children, teachers and students—change to a growth mindset, they change from a *judge-and-be-judged* framework to a *learn-and-help-learn* framework. Their commitment is to growth, and growth takes plenty of time, effort, and mutual support to achieve and maintain. (Dweck, 2016, p. 254)

These insights from the psychology literature emphasizing the advantages of nurturing “growth mindsets” in organization members suggest that school leaders interested in improving the instructional planning and classroom teaching practices of their education personnel should work intentionally to build and sustain robust, organization-wide professional learning cultures in their school districts that are focused on fostering in educators a desire for *continuous critical self-reflection and renewal*. These cultures should: 1) encourage personnel to actively participate and take ownership in their own ongoing professional learning and development; and 2) seek to involve teachers directly in acquiring and sharing cutting-edge content knowledge and skills coupled with engaging in robust peer-to-peer instructional coaching and collegial mentoring activities that can challenge teachers to continuously evaluate their pedagogical thinking and instructional practices and motivate teachers to explore their own individual and collective professional learning potentials.

Design Principles Derived from the Bedlow-Morton Rural School District Case Study

The collective design-based instructional improvement intervention program development and implementation efforts completed by education leaders in the Bedlow-Morton case study led to the formulation of several noteworthy ***design principles*** associated with school district task force members’ use of educational design research methods and PD intervention program development techniques to address their rural school district’s specific instructional improvement challenges. The design principles detailed below—articulating some of the distinctive professional learning payoffs that

can accrue to teachers working in their grade-level teams and campus-based professional learning communities through engaging together in carefully designed and structured root-causal data analysis and immersive collegial teaming and peer-mentoring activities—may be of some use to district change agent leaders working in similar rural contexts who are tasked with designing and implementing creative professional development programs for teaching staff to assist them in effectively addressing the college and career readiness–integrated learning support needs of their rural students.

Adopt a design-based intervention approach to rural school district instructional improvement. Change agent leaders working in small rural school districts can utilize design-based improvement thinking methods and immersive professional learning strategies to develop customized PD intervention programs that can provide teaching staff with specific content knowledge and applied skills in data-teaming procedures (including how to engage together in systematic, disaggregated data analyses to identify and address the underlying root causes of students’ learning deficiencies) along with creative instructional planning and assessment strategies that can assist educators in being able to more effectively address the specific learning support needs of their rural students. The new content knowledge and instructional tools educators obtain through their immersive team-learning experiences in these kinds of design-based PD intervention programs can position teachers to be able to craft creative, data-informed, and practical *college and career readiness–integrated* interdisciplinary learning experiences for students in their classrooms that can best prepare students for success in their post-secondary learning endeavors.

Make systematic data teaming and root-causal data analysis central features of your school district’s professional learning culture. Rural school district leaders can jumpstart teachers’ professional learning experiences and motivate teachers to reaffirm their commitment to continuous learning through designing professional development programs that can involve teachers directly in experiencing the learning payoffs (for both teachers and their students) of engaging together in systematic analyses of disaggregated student-learning assessment data to: 1) investigate and identify the underlying root causes of students’ learning deficiencies; and 2) leverage these data analysis results to develop and implement targeted classroom interventions that can enhance student opportunities for interdisciplinary peer-to-peer learning. These kinds of in-depth data analysis activities can be readily incorporated into teachers’ weekly regimen as they instructionally plan together within their grade-level teams and campus-based professional learning communities to create relevant, customized interdisciplinary units that can enhance their students’ involvement in meaningful *college and career readiness–integrated* classroom learning experiences.

Incorporate multiple peer coaching and collegial mentoring cycles into PD intervention program designs to expand and deepen teachers’ real-world applied learning experiences. Involving teachers directly in ongoing peer coaching and collegial mentoring activities to examine and offer constructive feedback on each other’s instructional planning and classroom teaching practices can be an excellent way to nurture a *critical reflective mindset* in teachers and motivate teachers to adopt a healthy commitment to their own continuous professional learning and renewal. Moreover, this kind of critical reflective mindset can be cumulative and generate further action-oriented teaming efforts as teachers become increasingly motivated over time to continue to search for additional creative ways to collaborate in data-informed analyses of their own instructional planning and classroom teaching practices to positively expand and deepen their students’ classroom learning experiences.

Create turnkey momentum for the design-based improvement approach in your district through accentuating the multiple benefits of design-based intervention thinking and encouraging education staff to adapt/integrate design-based improvement principles into their day-to-day instructional leadership and collegial teaming practices. Campus instructional leaders, lead teachers, instructional coaches, school counselors, and other education personnel can become “turnkey advocates” for design-based improvement thinking through: 1) recognizing and acknowledging the multiple learning payoffs that can accrue to themselves and their students through utilizing design-based improvement principles

and procedures; and then 2) intentionally modeling to their educator colleagues how to go about internalizing and using design-based improvement thinking and practices in their professional practice. In addition, change agent leaders in both rural and urban school districts can create structured opportunities for expanding educators' familiarity with design-based instructional improvement strategies and build "positive turnkey momentum" among education personnel for engaging in design-based data teaming through developing *district-level professional learning communities (district PLCs)*. Within these kinds of district-level learning communities, educators can engage together in cross-campus curriculum and instructional planning discussions and openly explore the potential advantages of incorporating design-based improvement thinking and PD intervention programming into their overall district improvement efforts.

Pursue creative partnerships with regional higher education and corporate business entities to expand college and career learning opportunities for rural students. Rural school district leaders can significantly broaden college and career learning opportunities for their students through cultivating long-term partnering relationships with regional junior colleges and four-year universities. Moreover, multiple small rural school districts can band together to form *rural school district coalitions* or *consortia* that can make the prospects of partnering with rural school districts more appealing to regional colleges and universities. Importantly, rural school district–higher education partnerships can lead to the creation of various kinds of college and career readiness programs that can directly benefit rural students. Some examples of such partnership programs include: 1) *Early College High School (ECHS) programs* that can enable rural high school students to enroll in and earn credit for college-level courses; and 2) *Community College Workforce Development programs* that can provide rural students with relevant school-to-work and workforce development preparation opportunities. These kinds of rural school district–higher education partnerships can also expand opportunities for rural teachers to access customized professional development (PD) programs and form meaningful collaborative relationships with rural education improvement researchers working in regional community colleges and universities. In addition, rural school districts can explore forming long-term partnerships with multiple business entities (corporate agriculture industries, rural community economic cooperatives, regional medical corporations, etc.) who can help support rural school districts through providing rural teachers and students with expanded access to reliable broadband internet connectivity and through designing additional career-specific "school-to-work" internship learning opportunities for rural students.

Conclusion

The rural school district improvement case study presented and discussed in this article showcases some of the unique organizational and sociopolitical challenges superintendent leaders in rural communities must navigate to address the context-specific post-secondary learning preparedness support needs of rural students. The collective turnaround district efforts engaged in by the superintendent and his Bedlow-Morton School District instructional improvement task force illustrate how district leaders interested in improving the overall quality of instructional planning and interdisciplinary teaching in their district in ways that can enhance the college and career readiness–integrated learning of their rural student populations can tap into the power of *design-based improvement thinking* and *professional development intervention programming* to assist educators in learning how to: 1) engage together as data teams to systematically analyze the root causes of students' learning deficiencies; and 2) leverage conclusions and interpretations drawn from data analysis results to design differentiated interdisciplinary lessons and instructional units that can involve students directly in authentic college and career readiness–integrated learning experiences that can enhance students' post-secondary preparedness.

Adopting a *design-based methodological approach to instructional improvement* can be an especially useful strategy for change agent leaders (superintendents, campus-based principals, program directors, and other instructional supervisory personnel) operating in rural school district situations, particularly in small rural communities where obtaining customized professional development support for rural

educators from faculty and consultants in regional universities and education service centers that are geographically distant may be difficult and where student access to available college and career mentors (through school district–business partnerships, school-to-work programs, etc.) may be limited. Designing and implementing “customized, data-rich immersive learning experiences” for rural educators—such as the kinds of immersive team-learning experiences implemented as part of the Bedlow-Morton School District instructional improvement intervention program profiled above—can enable teachers, instructional coaches, and related teaching staff working in rural classrooms to experience the learning dividends that can accrue to both themselves and their students from engaging in sustained, data-informed root causal analyses and associated differentiated unit planning supported by robust peer coaching and collegial mentoring *that are directly integrated into educators’ regular day-to-day campus- and grade-level instructional practices*. Perhaps, most importantly, leveraging the power of immersive learning as part of an overall design-based methodological approach to instructional improvement can be one way district change agent leaders can tap into and invigorate the innate *continuous team-learning potential* of rural educators and, in doing so, substantively broaden and deepen twenty-first-century college and career–readiness learning opportunities for rural students. Collective results and findings associated with the design-based intervention development and implementation activities completed by education leaders in the above case study report provide some positive evidence for how rural school district leaders can employ *design-based analytic thinking* in conjunction with *systematic data-teaming processes* to develop and implement targeted professional learning programs that can advance instructional improvement and reenergize educators’ professional practices. Superintendent change agent leaders working in rural settings may find the *educational design approach* to district improvement highlighted in this article of some practical use as they collaborate with their education colleagues to strive to address difficult and persistent teaching, leading, and learning improvement challenges in their rural school district communities.

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