

# Project Based Learning Virtual Instructional Coaching Networked Improvement Community

Final Report  
September 2016

Prepared for:  
Lucas Education Research

Prepared by:  
Andrew Krumm, Jared Boyce, Cynthia D'Angelo, Timothy Podkul, Mingyu Feng, Elizabeth Christiano, and Erica Snow  
*Improvement Analytics*

Preferred citation: Krumm, A. E., Boyce, J., D'Angelo, C. Podkul, T., Feng, M., Christiano, E., & Snow, E. (2016). *Project-based learning virtual instructional coaching networked improvement community*. Final report. Menlo Park, CA: SRI Education.

Statements and opinions expressed in this report are those of the authors and do not necessarily reflect those of Lucas Education Research or the George Lucas Education Foundation.

## **SRI Education**<sup>™</sup>

A DIVISION OF SRI INTERNATIONAL

Education, a division of SRI International, is tackling the most complex issues in education to identify trends, understand outcomes, and guide policy and practice. We work with federal and state agencies, school districts, foundations, nonprofit organizations, and businesses to provide research-based solutions to challenges posed by rapid social, technological and economic change. SRI International is a nonprofit research institute whose innovations have created new industries, extraordinary marketplace value, and lasting benefits to society.'

## **IMPROVEMENT ANALYTICS**

The Improvement Analytics group combines the discipline of improvement science with the power of advanced analytics to solve pressing educational problems. We believe that partnerships between researchers and practitioners are core to spreading effective practices and making them work in diverse contexts. Based at SRI International, one the world's leading independent nonprofit research institutes, the Improvement Analytics group leverages broad domain expertise and diverse methodological approaches to support those working with learners of all types to turn promising ideas into improvements. Across multiple partnerships, we have helped educational organizations find actionable insights within complex data sets and develop as well as productively adapt instructional innovations.

Silicon Valley  
(SRI International headquarters)  
333 Ravenswood Avenue  
Menlo Park, CA 94025  
+1.650.859.2000  
[education@sri.com](mailto:education@sri.com)

SRI International is a registered trademark and SRI Education is a trademark of SRI International. All other trademarks are the property of their respective owners.  
Copyright 2016 SRI International. All rights reserved.

## Executive Summary

There is a growing body of evidence that face-to-face instructional coaching can support improvements in teachers' practices and student learning. However, there is limited evidence to indicate whether coaching can be done well when conducted virtually, that is, when some or all of the interactions between teachers and coaches occur through communication technologies, such as videoconferencing. To address this gap in the evidence base, SRI International, the Buck Institute for Education (BIE), and Lucas Education Research (LER) formed a network of coaches, teachers, and leaders called the Project Based Learning Virtual Instructional Coaching (VIC) Networked Improvement Community. The VIC network developed a virtual instructional coaching model and refined it over time using tools and processes from improvement science. This report describes (1) high-leverage virtual instructional coaching practices that surfaced from coach-teacher interactions and (2) lessons learned about the use of improvement science for testing forms and processes developed for the virtual instructional coaching model.

The purpose of the VIC network was to advance teachers' project based learning (PBL) teaching practices in two Knowledge in Action (KIA) courses: Advanced Placement (AP) United States Government and Politics and AP Environmental Science. SRI facilitated the overall network and collected data from interviews and surveys of coaches and teachers; SRI also reviewed coaching documents and teachers' use of an online platform that housed KIA instructional materials. Using these data, the VIC network identified multiple characteristics of coach-teacher pairs that completed intended number of coaching activities, self-reported high perceptions of value for coaching activities, and demonstrated evidence of improved PBL teaching. Given the small number of participating coaches ( $N = 6$ ) and teachers ( $N = 12$ ), what was learned about coaching practices requires further testing. Nonetheless, the following findings had evidentiary support across multiple coach-teacher pairs:

- **A trusting relationship enabled a coach and teacher to discuss openly elements of a teacher's practice that needed improvement.** The VIC network was particularly interested in testing strategies and practices to support the creation of trust through solely online interactions. Surface-level trust, such as collegial interactions, manifested quickly, yet the degree of relational trust necessary for providing feedback critical to improving a teacher's practice took time to develop. Strategies that supported trust building included explicit email and meeting routines that coaches used to launch the coaching relationship, explicit forms that provided structure to coaching meetings, coaching activities that provided time for coaches and teachers to jointly plan for instruction, and making time during coaching meetings to discuss general issues facing a teacher before engaging in structured coaching activities.
- **Successful coach-teacher pairs maintained regular contact.** Regular contact came in the form of check-in emails related to instructional practices discussed during coaching meetings as well as general check-ins on how things were going. Some coach-teacher pairs exchanged cell phone numbers, which helped in maintaining regular contact and in answering quick questions.
- **Coach-teacher pairs who uploaded and reviewed teaching artifacts in a timely manner completed more coaching activities and more highly valued coaching activities.** Coach-teacher pairs who had fewer days between when teachers video recorded themselves teaching a KIA lesson and meeting to discuss the video, self-reported finding more value in coaching activities.
- **Successful coach-teacher pairs shared similar goals for coaching.** Throughout the development of the virtual instructional coaching model, the goal was to improve teachers' PBL teaching practices on one more practices over time. Not all teachers had this as their purpose for engaging in coaching. Some teachers, for example, wanted support navigating the KIA curriculum and others wanted to troubleshoot general teaching problems as they surfaced. When the aims of

the coach and the aims of the teacher conflicted, the coach and teacher did not have a successful relationship.

- **Successful coach-teacher pairs used and adapted coaching forms.** A key component of the virtual instructional coaching model included explicit forms that coaches and teachers were intended to use during coaching meetings. Successful coach-teacher pairs started out using the forms and purposefully modified them to make them work for their developing coaching relationship. For example, the idea of *coworking* meetings surfaced as an intentional change to the virtual coaching model. Coaches and teachers viewed this adaptation as a powerful setting for developing a trust and for the coach to offer feedback that helped to advance the teacher's PBL teaching practice.

The VIC network organized development and testing around a quality improvement, or process improvement, approach. This approach provided structure to the rapid development and testing of the virtual instructional coaching model. Engaging in improvement activities within a network of participants is an emerging approach for conducting research and development activities in education. Based on the use of improvement science as a research and development approach, the following takeaways were identified:

- **Properly framed, explicitness about coaching forms and processes supported improvement activities.** Understanding a process is important to improving it, and understanding a process can come from identifying and being explicit about the steps and key decision points involved in it. As the network developed the virtual instructional coaching model, it placed considerable effort on being explicit about what coaches and teachers were to do before, during, and after coaching meetings. The idea of explicitness, however, was articulated within an overall focus on improvement, whereby anyone who wanted to change a form or process was encouraged to do so and to share what was learned from his or her tests.
- **Embedding improvement activities into instructional coach's professional development sessions supported testing improvements to the coaching model and building coaches' virtual instructional coaching practice.** A key element of the overall virtual coaching model was coach professional development. To support coaches, BIE and SRI organized six virtual professional development sessions where coaches discussed and developed changes to the coaching model based on evidence from each coach's meetings with his or her teacher. Evidence, for example, included video recordings of coaching meetings between a coach and a teacher. Along with discussing aspects of instructional coaching, learned about improvement science and Plan-Do-Study-Act (PDSA) cycles. Embedding improvement work within professional development time surfaced major improvement opportunities and revisions to the overall model while helping coaches build their own skills and abilities to coach in virtual environment. This skill building occurred by having coaches align changes that they were attempting and documenting using PDSA cycles with problems of practice they were experiencing during coaching activities.
- **Knowledge management was crucial to the functioning of the network.** Because coaches, teachers, and researchers were spread throughout the United States, there was a pressing need to develop strategies for managing coaching activities and data collection among the network participants. To meet this need, SRI developed a Google Site as a repository of resources for the network and a location for all forms used during coaching activities. With the Google Site, SRI, LER, and BIE could regularly monitor and learn from coaching meetings as they unfolded, which promoted rapid refinements to the coaching model and sharing of best practices.

Along with the above findings and takeaways, this report provides the forms and resources used by coaches and teachers in the appendices.

## Introduction

When done well, face-to-face instructional coaching is a powerful approach to teacher professional development, and evidence is emerging on the components of quality coaching programs and models (e.g., Atteberry & Bryk, 2011; Biancarosa, Bryk, & Dexter, 2010). Less well understood is what makes for effective instructional coaching when coaches and teachers are not geographically collocated and communication between coach and teacher is carried out through communication technologies, such as videoconferencing. In this project, SRI International, the Buck Institute for Education (BIE), and Lucas Education Research (LER) formed the Project Based Learning Virtual Instructional Coaching (VIC) Networked Improvement Community to develop and continuously improve a virtual instructional coaching model for helping teachers improve their project based learning instruction.

Members of the VIC network used tools and processes from improvement science to develop and refine the virtual instructional coaching model. Improvement science, as a discipline, has an established knowledge base (e.g., Berwick, 2008), and many improvement tools and processes have been tested across multiple organizations, such as hospitals and schools (see Langley et al., 2009). To organize development and testing activities, the VIC network used the Associates in Process Improvement's *Model for Improvement*, which is composed of three driving questions and an approach for testing change ideas (Langley et al.). This report describes the development of the VIC network and the ways improvement science was used to build and refine a virtual instructional coaching model to advance teachers' PBL practice.

## Context

The VIC network was organized into two phases that spanned 9 months. The first phase ran from September 2015 through December 2015 and the second phase ran from January 2016 through May 2016. To accomplish the ambitious goal of building and refining an instructional coaching model in such a short period of time, the VIC network adopted an improvement science approach to build a common language across network members and organize project activities using well-established tools and routines.

The VIC network was formed to help teachers improve their PBL practice within the context of two PBL curricula: Knowledge in Action (KIA) Advanced Placement (AP) United States Government and Politics (APGOV) and KIA AP Environmental Science (AP ES). PBL curricula are often organized differently from traditional curricula. KIA courses, in particular, structure AP-level content around projects that serve as the spine of the course, concepts that are revisited through sustained inquiry (i.e., looping), and authentic learning experiences focused on relevance. Teachers using KIA materials are also seen as collaborators in adapting learning experiences and the curriculum itself in an effort to continuously improve it.

Understanding a problem of practice from the perspective of both researchers and practitioners is an important part of educational improvement projects (Bryk et al., 2015; Penuel, Fishman, Cheng, & Sabelli, 2011). For teachers new to KIA, a potential challenge for implementing the curriculum is that their schools may not have the necessary expertise to support them in implementing and improving their use KIA. This expertise gap is particularly pressing for LER and BIE because both organizations work with teachers in schools throughout the United States.

In working to provide quality instructional coaching to geographically dispersed teachers, the VIC network specified how to carry out coaching activities using only communication technologies. To develop and test explicit coaching activities, the VIC network adopted a learning-by-doing approach (Russell, Jackson, Krumm, & Frank, 2013), developed tools and routines for connecting coaches and teacher using insights

from prior research, and collected data related to what was and was not working for coaches and teachers.

Six coaches and 12 teachers were recruited to participate. Teachers were located in 10 different high schools throughout the United States. Teachers who were part of the same charter management organization, district, or educational organization often were not located in the same building. Across the four participating educational organizations, five different states were represented: Iowa, Arkansas Texas, California, and New York. Teachers were provided video cameras and tripods to record themselves teaching and to later share the recorded lesson with their coach as part of the virtual instructional coaching model.

As members of the network, responsibilities of teachers included (1) implementing either KIA AP ES or KIA APGOV, (2) participating in five instructional coaching cycles, (3) participating in four monthly interviews with SRI, and (4) filling out surveys and logs as part of the overall NIC measurement system. Each teacher was paired with one BIE instructional coach for coaching purposes and one SRI researcher for data collection and general project support.

The BIE coaches were recruited from a pool of National Faculty who are experts in PBL and in conducting PBL-focused professional development activities. As members of the network, coaches were responsible for (1) participating in five instructional coaching cycles, (2) participating in six interviews with SRI, (3) documenting the implementation of coaching tools and routines using Plan-Do-Study-Act (PDSA) forms, (4) participating in six professional development sessions, and (5) completing coach-only reflection forms.

Along with coaches and teachers, representatives from SRI, BIE, and LER participated in the VIC network as the network hub. Responsibilities of the hub were to (1) support improvement science processes across the network, (2) facilitate knowledge management across the network, (3) provide regular network communications, (4) organize face-to-face and virtual meetings, and (5) perform data analysis tasks for the network (Bryk et al., 2015).

## **VIC Network Launch Event**

One of the first activities for the VIC network was a launch event, which brought together SRI, LER and BIE along with leaders from participating districts, charter management organizations, and educational organizations. At the launch event, participants worked to develop a common understanding of instructional coaching. One of the first activities involved organizing an *affinity diagram* to answer the question, What is core to quality and consistent instructional coaching? Using common themes that were identified, participants then engaged in a *process mapping* activity where groups of individuals specified key steps and decisions involved in instructional coaching before, during, and after a coaching meeting.

Using the products of these activities, launch event participants then codeveloped an aim statement for the network. One of the early challenges in writing the aim statement was the dual nature of the network's purpose: building a virtual instructional coaching model and improving teachers' PBL instruction through the coaching model. The VIC network chose to formulate an aim statement that focused on improving teachers' PBL instruction: *Using a virtual coaching model, all participating teachers will progress one level—based on mutual agreement between teacher and coach—on two jointly defined teaching practices on the PBL Teaching Framework by June 1st, 2016.* Network participants reasoned that orienting the network toward advancing PBL teaching would keep network participants focused on improving

instruction; therefore, the necessary work of developing the coaching model would not be an end in itself but oriented toward improving PBL instruction for participating teachers.

After developing aim statements, participants identified multiple factors that were hypothesized as necessary for achieving the aim. To help organize hypothesized factors, the VIC network developed a *driver diagram*. As Bennett and Provost (2015) describe, a driver diagram “consists of a team’s shared theory of knowledge—which is developed by consensus—and includes relevant beliefs of team members about what must change and which ideas about how to change may result in improved outcomes” (p. 39). Bennett and Provost go on to note that, for improvement projects, driver diagrams can be used for multiple purposes, “from the improvement of a single process to the redesign of an existing service to the creation of new products aimed at enhancing user experience” (p. 39). For educational organizations participating in the VIC network, jointly developing a driver diagram served as a useful process and product for outlining key components of the planned virtual instructional coaching model (see Appendix A).

### **Virtual Instructional Coaching Model**

Following the launch event and based on the jointly developed driver diagram, SRI conducted a 90-day research scan (see Park and Takahashi [2013] for an overview) to further the network’s understanding of the jointly developed key drivers and to identify potential evidence-based practices and strategies. Using the driver diagram and 90-day scan, SRI and BIE then mapped out key components of the potential virtual instructional coaching model, such as roles and responsibilities for teachers and coaches, a detailed schedule of what teachers and coaches were doing and when they were doing it, a collection of forms and protocols to both structure coach-teacher interactions and document their interactions, technical resources for conducting virtual meetings, and forms and processes for ongoing professional development opportunities for coaches.

### **90-Day Scan**

The 90-day scan identified few studies that specifically addressed virtual instructional coaching. However, much has been written about instructional coaching in general and several groups are working to better understand how best to engage in virtual instructional coaching, such as the National Center for Teacher Effectiveness, the Carnegie Foundation for Advancement of Teaching, and The New Teacher Project. To gather insights into virtual instructional coaching, we conducted interviews with representatives from these organizations and distilled applicable evidence-based practices from the literature on more traditional instructional coaching approaches. The findings were organized into three categories: (1) trust between coach and teacher, (2) teacher motivation to engage in coaching, and (3) the importance of coaches’ feedback to teachers.

#### *Trust between Teacher and Coach*

A core element of trust is that the expectations of both teacher and coach are consistently validated in the actions of the other (Bryk & Schneider, 2002). When expectations are validated by action, teacher and coach can concentrate on the work at hand rather than speculate about the intentions of the other. Bryk and Schneider identified four components of trust that need to be established and maintained: respect, personal regard, competence, and integrity. Ippolito (2010) identified two strategies that coaches can use to build trust, both of which were later implemented into network’s virtual instructional coaching model.

The first strategy identified by Ippolito involves using protocols, agendas, and meeting plans to guide coaching sessions. These protocols and agendas can help lessen teachers’ anxiety about what the coaching session will entail; less stress and anxiety can reduce the cognitive demand on teachers and

increase the probability that they will see a coach's actions in a positive light (Myung & Martinez, 2013). The second strategy involves the coach coplanning and codeveloping instructional strategies with a teacher. This strategy was not initially built into the network's virtual instructional coaching model; however, it would later surface as a potent change idea. Teachers' perceptions of a trusting relationship between coach and teacher were measured at two time points based on survey items that were adapted from Bryk and Schneider (2002).

#### *Teacher Motivation to Engage in Coaching*

In recent work from the Motivation Research Institute, Kenn Barron and Chris Hulleman highlighted three questions in understanding an individual's intrinsic motivation to engage in an activity: Can I do this task (expectancy)? Do I want to do this task (value)? What are the barriers preventing me from doing this task (costs)? For the VIC network, participation in coaching was voluntary, so a teacher's motivation to participate was crucial to understanding the level of effort he or she put forth. According to an expectancy-value-cost model of motivation (see Kosovich, Hulleman, Barron and Getty, 2014), when teachers know they can do what is expected of them both during coaching activities and in their teaching, they are more likely to engage with greater effort and persistence in both. To increase teachers' expectancy within and across coaching sessions, coach-teacher pairs were provided with explicit forms to scaffold coaching meetings and establish clear expectations. Along with specific forms, teachers' motivation to participate in coaching was measured at two time points based on survey items that were adapted from Kosovich, Hulleman, Barron and Getty (2014).

#### *The Importance of Coaches' Feedback to Teachers*

Feedback is crucial to identifying opportunities for improvement and closing the gap between current and desired performance. How, then, can a coach provide feedback that can help a teacher improve while not affecting the trust that is being built in the newly formed relationship? Feedback that directly targets building and maintaining trust can involve (1) reinforcing that the coach has high standards for the teacher, (2) communicating to the teacher that he or she can reach that standard, and (3) identifying specific steps that the teacher can take to achieve desired performance. Yeager and colleagues (2014) refer to feedback that helps individuals improve while maintaining a trusting relationship as *wise feedback*. Coaches were provided a prompts for using wise feedback with the teachers and the quality of feedback that coaches provided was measured across multiple coach and teacher interviews (see Appendix B).

### **Overarching Components of the Virtual Instructional Coaching Model**

The VIC network's approach to virtual instructional coaching was made up of two overarching components: (1) coach-teacher cycles of inquiry and (2) instructional coach professional development opportunities. Both components were supported with explicit forms and processes, and both were initially developed in Phase I of the project and tested and refined during Phase II. Along with the 90-day scan mentioned above, tools and resources that were previously developed by VIC network hub members were used to support the development of network's virtual instructional coaching model. For example, BIE had been providing face-to-face instructional coaching for many years and had developed forms and processes used with teachers throughout the United States. In addition, LER had developed an online portal for teachers to interact with KIA curricula and materials, as well as an instructional coaching section that would allow for teachers and coaches to upload, review, and comment on videos of teaching.

#### *Coach-Teacher Cycles of Inquiry*

The original design of the cycle of inquiry model was based on prior materials developed by BIE. The materials were adapted to fit five three-week cycles to be conducted during Phase II of VIC network's activities. Each cycle of inquiry consisted of (1) a pre-observation meeting in which coach-teacher pairs

jointly selected an area for the teacher to focus on during the cycle and plan the details for the classroom observation, (2) the teacher video-recording a class session that would be posted to the LER online portal, (3) the coach reviewing and providing feedback on the video, and (4) a post-observation meeting in which the coach-teacher pairs debriefed on the video, discussed the coach's feedback, and jointly determined the next steps for the following cycle.

The forms developed to support coaches and teachers were prepopulated Google Docs that were organized on a Google Site in folders that only specific coach-teacher pairs, along with network hub members, could access (see Appendix C). These forms were intended to be used by both the coach and teacher during pre-observation and post-observation meetings. Coaches and teachers connected virtually using the teleconferencing service Zoom. In between pre- and post-observation meetings, coaches viewed a teacher's video on the LER online portal and provided time-stamped annotations that the teacher viewed before the post-observation meeting. Coaches and teachers could also use a Google Doc for *scripting* the video observation; in this observational note-taking technique, coaches could document what teachers and students were doing in the video using low-inference statements (see Appendix D).

#### *Instructional Coach Professional Development Opportunities*

Coach professional development began with two onboarding sessions, the first of which was an overview of the coaching model and the second provided an overview on improvement science. Coaches also participated in formal 90-minute professional development sessions led by BIE and SRI at the end of each cycle of inquiry. None of the coaches had previously coached in a fully virtual context, and the partnership anticipated that coaches would need additional supports and professional development. Coaches were divided into two small groups based on the KIA course they were coaching, allowing for discussions and content to be specifically tailored to the curricular and instructional needs of each group.

Coaches and teachers conducted their virtual coaching meetings using Zoom, which offered the opportunity to record the meeting. If a teacher agreed, the coach recorded either the pre- or post-observation meeting. These recordings could then be used to highlight an ongoing problem of practice that the coach was experiencing or as evidence of the enactment of a specific change idea implemented to improve the coaching model during coaching professional development meetings. The content of the professional development sessions also included preselected readings to drive discussions on coaching practices. Thus, professional development sessions contained both predefined content, such as a reading about instructional coaching, and evidence from practice. Between professional development sessions, coaches completed a PDSA form in line with a specific change they were implementing to improve the virtual instructional coaching model. For some sessions, BIE and SRI provided coaches direction on what to organize PDSA cycles around (e.g., specificity of feedback), and for other sessions the topic grew organically and was tested by all coaches after discussing the potential for the change idea (e.g., integrating coworking time into pre-observation meetings).

## **Methods**

### **Data Collected**

Multiple measures were collected and analyzed to capture both processes and outcomes associated with the virtual instructional coaching model. Measures were aligned with the network's driver diagram and informed by the 90-day scan. SRI regularly interviewed coaches and teachers, distributed surveys to teachers, reviewed coach-teacher videos, and examined completed forms. These data sources were used to assess teachers' and coaches' experience of the virtual instructional coaching model and assess whether or not changes enacted by SRI, BIE, and coaches led to improvements in coaching activities over time.

Teacher measures included in-person site visits, an initial teacher interview, four interviews, and four surveys. SRI visited 9 of the 12 participating teachers at their school sites and observed at least one KIA lesson. All 12 participating teachers were interviewed either in person during the site visit or in a teleconference. The purpose of these site visits and initial interviews was to understand teachers' initial feelings about KIA, their teaching context, and their goals for participating in the project.

Each teacher was scheduled to have four online interviews with SRI personnel over the course of the project. Each online interview was scheduled for approximately 30 minutes and was designed to be as short as possible to reduce the burden on the teachers. The purpose of these online interviews was to collect data on the coach-teacher relationship and teachers' perceptions of value related to the coaching and the KIA curriculum. Each teacher was also asked to complete four online surveys over the course of the project. The goal of the surveys was to obtain a broader collection of data from teachers across more of the primary drivers while creating only a minimal additional burden for the teachers. Each online survey was designed to be completed in 2 minutes or less (see Appendix E). Which KIA materials teachers accessed and at what times of the year were collected from the online portal that housed the KIA curriculum. These data were used mainly for exploratory purposes.

Each coach-teacher pair was expected to complete three coach-teacher forms per cycle of inquiry as part of their workflow (i.e., pre-observation form, video observation note-taking form, and a post-observation form). The purpose of these forms was twofold. First, the forms were designed as a change idea in and of themselves to support coaches and teachers in having structured, focused, productive meetings along with having designated spaces for teachers and coaches to collaborate and work together during the meetings. Second, these forms served as data collection instruments as they captured the content of the coach-teacher meetings. Video recordings of teachers' instruction were used by coach-teacher pairs to support cycles of inquiry. These videos were not treated as data for this project beyond whether or not teachers submitted them.

Each coach was scheduled to have six online interviews with SRI personnel over the course of the project. The intention was to have one debrief interview at the end of each of the five scheduled cycles of inquiry, with one final summative debrief at the end of the project. Each online interview was scheduled for approximately 60 minutes. The purpose of these online interviews was to monitor the coach-teacher relationship, understand the challenges involved in implementing a fully online instructional coaching model, and talk to coaches about the change ideas they were testing related to improving the virtual instructional coaching model. Along with the three shared coach-teacher forms, coaches had their own coach-only forms that were to be completed after each meeting to document their reflections and assessments of the teacher's instruction and the coaching process. Along with these coach-only forms, coaches filled out PDSA forms as documentation of their implementation of a change idea.

## **Analysis Approaches**

As described above, the majority of the data collected for this project were qualitative, in the form of teacher debrief calls, coach debrief calls, coach professional development sessions, and various online forms and documents. An SRI researcher was assigned to two teachers and one coach to facilitate data collection. The SRI researcher was responsible for interviewing two teachers four times, interviewing one coach four times, and reviewing the corresponding coach-teacher documents and coach-only documents (i.e., upwards of 36 documents per coach-teacher pair). The SRI team conducted collaborative sense-making meetings after each cycle of inquiry and debrief calls to summarize and interpret the collected

qualitative data. Common themes, trends, and findings were documented and communicated to other network hub members on an ongoing basis throughout the project.

Data were collected and analyzed for two purposes. First, data were collected to understand the ongoing implementation of the coaching model. Debrief calls with teachers and coaches, teacher surveys, and coach PDSA forms were analyzed rapidly to assess modifications to the virtual instructional coaching model. Moreover, change ideas were evaluated based on the data that coaches collected and analyzed in relation to the tests they organized with the support of SRI and BIE during coach professional development meetings. Survey data were used for formative purposes as they provided a rapid way to assess teachers' perceptions of the coaching relationship, KIA curriculum, and benefits of coaching. Survey data were not used as stand-alone data; they were combined and corroborated with coach and teacher interviews when possible. Outside collaborative sense-making meetings, the SRI team examined the same corpus of data for the second purpose of identifying broader themes related to identifying virtual instructional coaching best practices. Surfacing best practices entailed two SRI researchers exploring all the data, identifying common themes and findings, and then corroborating what was learned with the SRI researcher who was assigned to support the coach-teacher pair. Findings that had relevance across multiple SRI researchers and other network hub members were outlined in an interim report that was shared with the network hub, prompting a reevaluation of themes and lessons learned.

## Results

### Instructional Coaching Practices

The primary aim set forth by members of VIC network was the following: *Using a virtual coaching model, all participating teachers will progress one level—based on mutual agreement between teacher and coach—on two jointly defined teaching practices on the PBL Teaching Framework by June 1st 2016.* In assessing the degree to which the network achieved this aim, we first identified the number of teachers who completed the intended number of coaching cycles of inquiry. Ten of 12 teachers completed at least one cycle of inquiry, 7 teachers completed at least three cycles of inquiry, 6 teachers completed at least four cycles of inquiry, and 5 of 12 teachers completed all five intended cycles of inquiry.

Two teachers did not complete one full cycle of inquiry because of available time and scheduling conflicts. Virtual instructional coaching was voluntary, so availability and interest in participating in coaching were crucial to teachers' participation. Teachers needed time to engage in the virtual coaching process, from collecting videos of instruction to participating in coaching meetings. The exit interviews conducted with each teacher who did not complete one full cycle of inquiry indicated that they were unable to participate because of prior personal and professional commitments.

Eight teachers continued to work with their coaches through the end of the project, and two teachers did not complete a full cycle of inquiry. Multiple factors contributed to the variation in the number of cycles completed by all coach-teacher pairs. The number of cycles completed was important to labeling a coach-teacher pair successful. Other factors included the degree to which teachers met the aim of the network—advancing one level on two PBL teaching practices as outlined on BIE's PBL Teaching Rubric (see Appendix F). Three coach-teacher pairs reported that they jointly self-assessed and agreed that the teacher advanced his or her PBL teaching practice on two PBL teaching practices; one coach-teacher pair reported improving on one PBL practice. In response to a survey item, five teachers self-reported that they *agreed* or *strongly agreed* with the statement that they advanced their teaching one level on two practices.<sup>1</sup>

---

<sup>1</sup> Two other teachers reported that they *slightly agreed* with this statement.

Successful coach-teacher pairs (1) had a teacher advanced his or her PBL practice, (2) completed at least four cycles of inquiry, and (3) had both coach and teacher value the experience of coaching. For the coach-teacher pairs that demonstrated some or all of these characteristics, the following factors were common and help to explain what made them successful: They (1) had a trusting relationship that allowed for critical feedback, (2) maintained regular contact, (3) uploaded and viewed teaching artifacts in a timely manner, (4) had shared goals for coaching, and (5) used as well as adapted coaching forms.

#### *Trusting Relationship that Allowed for Critical Feedback*

Successful coach-teacher pairs had a trusting relationship that enabled the coach and teacher to discuss elements of the teacher's practice that needed improvement. Trust is regularly cited as necessary for successful instructional coaching. Trust takes time to build and is reflected in one's expectations being consistently validated in the actions of another (Bryk & Schneider, 2002). The degree of relational trust necessary for providing feedback critical to improving a teacher's practice took time to develop. When trust was present, however, in terms of coaches' and teachers' mutual perceptions of competence, personal regard, respect, and integrity, successful relationships formed.

Throughout the project, SRI, LER, and BIE emphasized the importance of establishing and maintaining trust within a coach-teacher relationship, which was supported by evidence from both researcher and practitioner communities specific in the 90-day research scan. Various aspects of the project including initial coach-teacher contact protocols, change ideas, and the cycles of inquiry were explicitly designed to build and sustain trust in the coach-teacher relationship. Within these general practices, SRI and BIE supported the development of trust between teachers and coaches with respect to virtual instructional coaching by making it a focus on professional development sessions.

Trust, as evidenced in the relationships between coaches and teachers, was comprised of a sense of collegiality, and in some cases, a deeper sense of confidence in the other. Teachers and coaches, alike, reported little difficulty in developing collegiality. While collegiality was quickly developed and sustained, relational trust did not manifest across all coach-teacher pairs. For example, multiple coaches found what they believed to be considerable instructional problems in reviewing the video recordings of teachers' instruction. Some of these coaches felt that they had a strong enough relationship with their teachers to address their concerns in a direct fashion while expecting the conversation to be potentially uncomfortable for both people. Other coaches felt that they could not address their instructional concerns directly with their teachers without potentially calling the coach-teacher relationship into question.

Conversely, some teachers reported that they were not getting the type of support they felt they needed in the coaching process. One coach-teacher pair, for example, did not develop deeper relational trust in terms of the teacher's limited confidence in the coach's knowledge of KIA and follow-through on coaching activities. This coach-teacher pair lost momentum and did not complete one full cycle of inquiry in a timely fashion. Overall, however, the professionalism and mutual respect within the coach-teacher relationships appeared to be strong throughout the project.

The lack of strong relational trust can present several challenges in the coach-teacher relationship. As described above, some coaches and teachers avoided raising potentially uncomfortable issues for conversation due to lack of relational trust. Beyond this, some coaches highlighted that it was difficult to "leverage the relationship" to help teachers see the value in the coaching process and how it could help advance their PBL practice. These coaches described how instructional coaching can often be perceived by teachers as an added burden or a source of vulnerability and how they have historically found that

having strong relational trust is a critical asset for keeping teachers authentically engaged in the coaching process.

#### *Maintained Regular Contact*

Successful coach-teacher pairs maintained regular contact. Regular contact came in the form of check-in emails related to instructional practices discussed during coaching meetings as well as general check-ins on how things were going. Some coach-teacher pairs exchanged cell phone numbers, which helped in maintaining regular contact and answering quick questions. Given that of all communication between coach and teacher was virtual, regularity of communication was identified as important for maintaining the momentum and organization of coaching activities. Some coaches developed new routines of sending preparatory emails with links to appropriate coaching forms and resources that helped in organizing upcoming coaching activities.

#### *Upload and View Teaching Artifacts in a Timely Manner*

A key step in the cycle of inquiry model involved teachers collecting and uploading a video of their teaching. Cycles of inquiry took between 1 week and more than 1 month to complete. Factors affecting the range included technical issues working with the cameras to teachers' and coaches' schedules. Successful coach-teacher pairs uploaded and reviewed teaching artifacts in a timely manner, which often did not go beyond 5–7 days between a teacher uploading a video, a coach providing feedback, and the coach and teacher meeting to discuss the feedback.

#### *Shared Goals for Coaching*

Successful coach-teacher pairs had shared goals for coaching. Throughout development of the virtual instructional coaching model, the goal was to improve teachers' PBL teaching practices. Even though this was the intent of the model, not all teachers shared this aim. Some teachers, for example, wanted support navigating the KIA curriculum and others wanted to troubleshoot teaching problems as they surfaced. These purposes were different from those in the cycles of inquiry approach, which centered on identifying and improving on one or more PBL teaching practices over time.

In cases where teachers had different goals from the intent of the model, the coach had to work with the teacher to understand his or her needs. Given the voluntary nature of the project and the openness to try out ideas in the service of learning about the virtual instructional coaching model, coaches were encouraged to be responsive to teachers. This responsiveness helped in keeping teachers engaged in coaching but slowed progress toward advancing PBL teaching. The limited time available for carrying out the intended number of cycles of inquiry meant that coaching meetings not directed at advancing PBL teaching, took away from that goal.

#### *Used and Adapted Coaching Forms*

Cycles of inquiry were the backbone of the virtual instructional coaching model. There was consistent evidence from both teachers and coaches that the explicit nature of the cycles of inquiry model was helpful in launching the coach-teacher relationship. In particular, the different meeting forms were helpful in ensuring that key questions were being asked and answered. Before the cycles of inquiry formally began, coaches found the initial email and meeting protocols useful and appreciated the ability to "copy and paste" and then modify (see Appendix G). During these initial exchanges, however, coaches recommended needing more support in pointing teachers to the NIC website and walking teachers through the forms and other resources that were available to them on the website.

In general, the cycles of inquiry model was successful in supporting the virtual coaching process. Most teachers and coaches reported that the structure and support was quite helpful in establishing a baseline

for the coaching work. As the virtual coaching process progressed, some teachers and coaches expressed strong desires to deviate from the cycles of inquiry model as formally described. Some reported that the forms became repetitive and did not adapt to how the coach-teacher process was developing. Several teachers reported wanting to focus on topics that were not a part of the PBL Teaching Rubric, such as how to adapt the KIA curriculum within particular scheduling constraints or how to create rubrics for certain KIA assessments. Both teachers and coaches reported wanting to review artifacts besides the video recordings of instruction, such as student work, lesson plans, or grading rubrics.

Arguably the most successful change idea across the entire virtual instructional coaching project was integrating coworking sessions into the cycles of inquiry model. Several coaches felt that the model did not provide adequate time for teachers and coaches to actively collaborate in real time. Several coaches decided to combine the post-observation meeting with the next pre-observation meeting in a single meeting, freeing up one meeting per cycle to be a coach-teacher work session. Both teachers and coaches reported that the coworking sessions were of great value to the coaching process and the coach-teacher relationship. In many ways, coworking sessions offered a powerful opportunity for the coach to offer feedback that helped advance a teacher's PBL teaching practice.

## **Developing and Testing Virtual Instructional Coaching Model**

As the network hub facilitated the VIC network, the following lessons learned were identified. Evidence for these lessons came from coach interviews and coaches' reflections at the end of the end of coach professional development sessions. These lessons are intended to support future research groups interested in using an improvement science approach within a network or researchers and practitioners: (1) properly framed, explicitness around coaching forms and processes supported improvement activities; (2) embedding improvement activities into instructional coach's professional development sessions supported testing activities and building coaches' virtual instructional coaching practice; and (3) intentional knowledge management activities were crucial to the functioning of the network.

### *Explicitness around Coaching Forms and Processes*

A key finding from the use of improvement science tools and routines within the VIC network is that, when properly framed, explicitness about coaching forms and processes supported both coaching and improvement activities. Important to this idea, however, is the way explicitness is framed. As Bryk et al. (2015) described in their book on supporting quality improvement in schools, explicitness is often conflated with de-skilling and de-professionalizing teaching. Within an improvement-oriented project, explicitness is crucial to *understanding* as opposed to *ensuring compliance*.

Deming (1986) observed that understanding a process is necessary for improving it, and understanding a process comes from being explicit about the steps and key decision points involved in it. As the VIC network developed the virtual instructional coaching model, it placed considerable effort on being explicit about what coaches and teachers were to do before, during, and after coaching meetings. The idea of explicitness was articulated within an overall focus on improvement, so that anyone who wanted to change the process was encouraged to do so and to share what was learned from his or her tests. Researchers and coaches who wanted to change an element of the coaching model needed a goal, an explicit change idea, a potential source of evidence, and a rationale for how a change aligned with the network's working theory for improvement. All coaches were provided professional development on the Model for Improvement as well as the PDSA process; any coach who had an idea and was willing to test it was given the opportunity to do so. By having a common understanding of explicit coaching processes in place, modifications to the model were understood across coaches and could be tested quickly.

For example, as the virtual coaching process progressed, several teachers and coaches expressed strong desires to deviate from the cycles of inquiry model. They reported that the forms became repetitive and did not adapt to how the coach-teacher process was developing. Several teachers reported wanting to focus on topics that were not part of the PBL Teaching Rubric, such as how to adapt the KIA curriculum within particular pacing constraints or how to create rubrics for certain KIA assessments. These change ideas were tested across 17 PDSA cycles conducted by coaches, and the outcomes were discussed during coach professional development sessions.

#### *Embedding Improvement in Coaching Activities*

Crucial to the success of the development and testing work was embedding improvement activities into instructional coach's professional development sessions. A key element of the overall virtual coaching model was coach professional development. To support coaches, BIE and SRI organized six virtual professional development sessions where coaches implemented changes to the coaching model and documented them using the PDSA approach. Embedding improvement work within professional development time surfaced major improvement opportunities and revisions to the overall model while helping coaches build their own skills and abilities to coach in virtual environment. This skill-building occurred by having coaches align changes that they were attempting and documenting using PDSA cycles with problems of practice they were experiencing during coaching activities.

One of the core assumptions of this project was that virtual instructional coaching differs from in-person instructional coaching in important ways. Given that premise, coaches were provided regular professional development. Overall, coaches were actively engaged in professional development sessions and found them to be valuable. Coaching meetings carried out through Zoom allowed coaches to record their conferences with teachers (much as teachers video recorded themselves teaching class), enabling the coaches to bring these video to coach professional development meetings and receive direct constructive feedback from their peers. Therefore, successful professional development sessions were based on evidence from practice. As with the cycles of inquiry coaches were conducting with teachers, professional development sessions that had an explicit focus and that were accompanied by evidence from coaches' own practice were particularly powerful professional learning opportunities.

The network was successful in testing various change ideas throughout the project. The original intention of the network was to have coaches conduct structured, documented PDSA cycles in alignment with the *Model for Improvement* framework. Even though improvement science activities were embedded in coach professional development activities, coaches reported that they struggled with the formal PSDA process and at times found it to be an additional, separate activity. Initially, a majority of coaches did not understand the PDSA approach or how to use it for testing potential change ideas until they had a chance to do their first test of change, reflect on it, and see the parallels between the PDSA approach and the cycles of inquiry approach that they were asking teachers to engage in. Thus, experience and analogy helped coaches develop the skills to engage in improvement activities.

#### *Knowledge Management*

Knowledge management was crucial to the functioning of the overall network. Because coaches, teachers, and researchers were spread throughout the United States, there was a pressing need to develop strategies for managing coaching activities and data collection among the network participants. Through the network's Google Site, SRI, LER, and BIE could regularly monitor and learn from coaching meetings as they unfolded, which promoted rapid refinements to the coaching model and sharing of best practices. In many ways, the VIC network was highly effective in maintaining regular and consistent avenues for communication among its members. SRI's system of having specific team members partner

with specific teachers and coaches over the full course of the project allowed the network to develop and maintain avenues of communication. With multiple methods of regular communication (e.g., regular interviews and questionnaires), teachers stayed in contact with SRI with an overall low time demand. Having regular interviews was helpful for establishing in-depth communication between the coaches and SRI. In particular, the coach professional development sessions provided key opportunities for coaches and members of SRI and BIE to communicate together in groups. Having group-based methods of communication provided rich opportunities for collaborative brainstorming and sense-making and resulted in the most effective change idea over the course of this project. Predeveloped forms as well as routines for using and revisiting the forms was crucial for collecting and acting on information on shorter time scales as well as for supporting later reflections on the overall functioning of the network.

## **Recommendations**

Below, we outline a series of recommendations based on the above findings and takeaways. These recommendations are intended to support those interested in developing a virtual instructional coaching model build off of the lessons learned from the VIC network's efforts to develop and test a virtual instructional coaching model.

### **Experience of Coaches**

The first set of recommendations focus on the experience of participating coaches. In one coach-teacher pair, the coach had deep knowledge of PBL teaching but did not have a great deal of experience with the KIA curricula. This combination affected the teacher's perceptions of value for the coaching because the coach could not help in answering KIA-specific questions. Therefore, for future virtual instructional coaching projects, we recommend that coaches have prior experience teaching the curriculum that the teachers are using. Across all coach-teacher pairs, teachers reported higher levels of trust and higher levels of perceived competence in their coaches if their coaches had taught the curriculum before.

Along with prior experience working with the focal curriculum, we recommend that coaches have prior experience with instructional coaching prior to moving to a fully online coaching environment. Coach-teacher pairs with coaches who had prior instructional coaching experience more readily developed trusting, productive coaching relationships than coach-teacher pairs with new instructional coaches. Coaches with prior in-person coaching experience appeared to have been better able to focus on adapting their existing skills to the fully online environment rather than having to develop both coaching skills and online communication skills in parallel.

### **Trusting Coach-Teacher Relationship**

Trust between coach and teacher was seen as an important resource in coach-teacher pairs within the VIC network. Based on the success of the coaching forms and coach-developed change ideas, we recommend that coaches and teachers schedule explicit opportunities to get to know one another prior to the beginning of the coaching cycles of inquiry. For example, teachers could record and upload several videos of their instruction prior to the beginning of their formal coaching cycles for the express purpose of helping coaches better understand teachers' contexts. During this project teachers were asked to upload a single video in advance of the coaching cycles. Based on the data, coaches found this to be helpful in understanding aspects of teachers' contexts; however, coaches reported that a single video was insufficient.

Along with getting to know one another at the outset, we recommend that coaches build time into the start of each meeting for unstructured, informal communication in which teachers and coaches can check in with each other. Based on the data, the most successful coach-teacher pairs reported including regular

check in time at the beginning of their meetings was a strong support for building and maintaining a trusting, effective working relationship.

Both teachers and coaches reported a strong desire for having some amount of in-person contact to establish the relationship and for both teachers and coaches to feel that the coach has an authentic opportunity to learn about the teachers' contexts. Based on this consistent request, we recommend that coaches and teachers have at least one in-person opportunity to meet each other and, if possible, for coaches to observe teachers' instruction. While the overall aim may be possible with more thorough virtual interactions (such as the above recommendation of teachers providing several videos of instruction), the data strongly suggest that some degree of in-person interaction between teachers and coaches would be valuable for supporting a faster development of a trusting relationship within coach-teacher pairs.

As coaches work with teachers, we recommend that coaches explicitly balance their use of directive and responsive coaching styles. By directive coaching we refer to coaching styles that view the coach as the expert and the coaching process is focused on coach-driven transmissions of specific knowledge, skills, and/or practices. By responsive coaching we refer to coaching activities that are driven by needs and issues raised by the teacher. While these two approaches are analytically distinct, in practice, the most effective coach-teacher pairs were able to both push teachers toward new areas for growth while also providing teachers with regular opportunities to direct the focus of coaching activities. One of the change ideas that was particularly successful for many coach-teacher pairs was the implementation of the coworking sessions, which allowed coaches to be somewhat directive in making suggestions while also providing space for the teachers to adapt coaches' suggestions.

### **Virtual Cycles of Inquiry**

To support virtual cycles of inquiry, we recommend that future virtual instructional coaching models be explicit with coaches on early communications with teachers and in the use of structured forms and protocols throughout coaching activities. Early communications protocols developed by SRI and BIE provided coaches (who were all new to virtual coaching) support in what to communicate to teachers. The structured nature of the forms were well received by coaches and teachers as they helped in organizing meetings and maintaining a record of the coaching meeting.

In between coaching meetings, we recommend that coaches communicate with their teachers regularly and reduce the time between coach-teacher contacts as much as possible. Specifically, coaches should strive to maintain regular communication with teachers outside of their scheduled meetings. Several coach-teacher pairs maintained regular communication between meetings by using check-in emails, reminders, and text messages. When teachers and coaches missed or rescheduled meetings, effective coach-teacher pairs used emails, text messages, or online chats to maintain their momentum and stay in contact.

A key component of the cycles of inquiry model used within the VIC network was the use of evidence from teachers' practice. We recommend that coaches and teachers in subsequent virtual instructional coaching models heavily ground their work in evidence of instruction that includes, yet is not limited to, video recordings of teachers' instruction. For example, some coach-teacher pairs reported that their sessions became more productive and were more engaging when teachers brought non-video sources of evidence into the cycles of inquiry, such as lesson plans, unit plans, rubrics, and assessments. While evidence varied across coach-teacher pairs, each coaching meeting needed evidence and examples from a teacher's practice to be productive.

In line with teachers bringing evidence to coaching meetings, we recommend that coaches provide their own samples of evidence of instruction in working with teachers. The most effective coach-teacher pairs had both teachers and coaches sharing evidence of their instruction with one another. Overall, this supported further development of trust within the coach-teacher relationship as well as providing teachers with focused supports beyond KIA materials. Teachers consistently reported that they found the materials the coaches provided to be valuable and highly supportive of their development.

One of the biggest successes of the VIC network came as a result of the improvement process and the identification of coworking time. While there were not enough PDSA cycles to make stronger claims related to effectiveness and generalizability, there was enough evidence collected to support the recommendation that future virtual coaching models integrate coworking time into their overall model. This coworking time could be directed at improving a PBL teaching practice, creating a lesson plan, reviewing student work, or designing an assessment. The original model of the cycles of inquiry were focused on planning on what teachers were going to do and reflecting on what teachers had done, which did not provide many opportunities for teachers and coaches to actively work together in the moment. During coworking sessions, on the other hand, coach-teacher pairs reported that these sessions were highly productive with increased levels of engagement from both teachers and coaches.

### **Shared Goals and Purposes for Coaching**

Multiple factors affected the degree to which teachers valued coaching activities. An important factor was the alignment between coach and teacher on the overall goals for coaching. Based on this finding, we recommend that coaches and teachers discuss their aims for coaching at the outset of a coaching relationship and regularly revisit these aims over time. Based on the data, there was significant variation across coach-teacher pairs as to how mutual agreements were reached, and there does not appear to be one specific strategy or approach that seemed to be more successful than others. The sole consistent practice across the most effective coach-teacher pairs was that coaches and teachers made time to explicitly discuss expectations and goals for coaching.

Related to discussing aims for coaching, and if the aim of the overall model is to improve teaching, we recommend that coach-teacher pairs conduct shared assessment of teachers' instructional skills at the beginning of the coaching relationship. This project used the PBL Teaching Rubric for this purpose. The effectiveness of this self-assessment varied significantly across coach-teacher pairs. The most effective coach-teacher pairs were able to reach early agreement regarding the areas in which the teachers needed the most support, coaches were able to directly attend to the needs of teachers, and teachers felt that the coaches were responsive to their needs. The less effective coach-teacher pairs completed the exercise, yet they did not effectively leverage the information gained to help guide their work together. Moreover, the most effective coach-teacher pairs regularly reflected on teachers' developing PBL instructional skills throughout their work together. Teachers in these coach-teacher pairs reported that their individual coaching sessions, and the overall coaching process, were more valuable due to these regular progress checks as they kept the coaching work focused on the areas in which teachers needed the most immediate support.

### **Coach Professional Development**

One of the key lessons learned across the multiple development and testing activities was the importance of coach professional development. Coach professional development was important because no coach had engaged in virtual instructional coaching before and it offered a ready location for discussing and organizing potential improvements to the coaching model overall. Based on the success of conducting

coach professional development, we recommend that future virtual instructional coaching organizers provide regular professional development sessions to the virtual instructional coaches. Based on coaches' reports, transitioning to an entirely online environment was overwhelming. Coaches reported having to rethink how they interacted with teachers, how they could make their meetings as effective as possible, and how to connect more effectively with teachers interpersonally. We believe that providing more specific and intentional training around best practices for virtual communications as well as providing space for coaches to voice their needs with respect to being in an entirely online environment could potentially improve coaches' experiences and potentially their effectiveness.

In conducting coach professional development, we recommend that coaches' professional development sessions model practices that coaches can apply to their meetings with their teachers. In particular, the most powerful professional development sessions involved coaches providing videos of their coaching sessions with teachers, just as teachers would provide videos of their instruction. Coaches were able to view these videos and provide direct feedback on how one might improve his or her coaching practice in the future. Importantly, these videos served to promote open, collegial discussions around what all participants could learn for improving their coaching. A logistical concern, related to KIA but one that could be replicated by other virtual instructional coaching groups is coaches could be split into small groups based on the material they are coaching for their professional development sessions. Content-based groupings allow for coaches to more readily address similar issues and small groups allow for more active participation from all members. Based on coaches' reports, coaches unanimously felt that the small, content-based groupings were effective for supporting them in their professional development. Again using the idea that coaches' professional development should mirror how coaches work with their teachers, coaches reported that they appreciated the mix of having professional development material provided for them while also having opportunities to direct the PD sessions around their immediate needs. Based on the data, the combination of the two styles of organizing the professional development content was effective in meeting the coaches' needs.

## **School Environment**

A factor affecting the success of some coach-teacher pairs was the school environment in which teachers worked. Early in the network's design and development work, the school environment was singled out as a key driver related to achieving the goal of advancing PBL teaching. While initially highlighted, a greater degree of effort went into developing the cycles of inquiry model and refining it over time. Even though it was not a consistent focus of the network's improvement activities, we recommend that subsequent virtual instructional coaching models promote actively seeking out information regarding formal teacher evaluation processes, teacher feedback and observation processes, and general professional development expectations of teachers.

Perceived conflicts between the coaching process and teachers' school environments were almost exclusively raised by teachers, resulting in coaches at times being caught off guard and feeling temporarily uncertain as to how best to address these issues. Existing protocols for the early phases of teachers and coaches getting to know one another already include explicit opportunities for teachers to share certain aspects of their teaching context with their coaches, and we recommend broadening these opportunities. While successful coach-teacher pairs in the VIC network were able to resolve perceived conflicts between the goals of the virtual instructional coaching model and what teachers felt they were being held accountable to in their schools, the overall coaching model could have been more effective if this information had been intentionally sought out prior to the start of coaching activities.

## Conclusion and Limitations

The purpose of the VIC network was to develop and test a virtual instructional coaching model and to identify high-leverage virtual coaching practices. The relative newness of virtual instructional coaching created the opportunity for this network to generate much needed insights and evidence on a potentially scalable approach for conducting instructional coaching. To begin developing evidence of effective virtual instructional coaching practices, SRI, LER, and BIE used available knowledge about general instructional coaching and codeveloped a virtual instructional coaching model that connected coaches and teachers through cycles of inquiry organized around teachers making video recordings of their practice and sharing them with coaches to receive feedback.

Using improvement science tools and approaches within a network of researchers and practitioners, SRI, BIE, and LER developed and tested a virtual instructional coaching model that advanced the PBL teaching practices of 3 of 12 teachers and exposed 9 teachers to an average of three full cycles of inquiry, which included a minimum of six virtual meetings with an experienced instructional coach and opportunities to receive feedback on three video-recorded PBL lessons. Every teacher who stayed with the project to its completion *agreed* or *strongly agreed* with the statement that meeting with his or her coach improved his or her teaching. This level of agreement shifted over time across coach-teacher pairs; the nimbleness of the network supported improving the virtual instructional coaching model over time to better meet the needs of teachers and advance their PBL teaching.

Key to the success of the VIC network was working closely with coaches and teachers to identify problems with the developing coaching model and to rapidly test potential solutions. Using data generated and collected by both researchers and practitioners in the network, factors common to successful coach-teacher pairs were identified. In developing and testing the virtual instructional coaching model, the following five factors were common across successful coach-teacher pairs; specifically, they (1) shared goals for coaching, (2) had a trusting relationship that allowed for critical feedback, (3) maintained regular contact, (4) uploaded as well as viewed teaching artifacts in a timely manner, and (5) used and adapted coaching forms. In reflecting on the success of facilitating the VIC network, SRI identified the importance of (1) explicit processes as foundations for improvement, (2) embedding improvement activities into professional responsibilities, such as professional development opportunities, and (3) strategically managing knowledge (e.g., coaching forms) to learn about and improve coaching activities.

The following limitations should be considered in relation to the above findings. First, this project launched with 12 teachers and six coaches, and there was attrition over the course of the project. Second, the virtual instructional coaching model was refined over time, so no one model was tested. Third, from an improvement science perspective, coaches were given a high degree of agency in identifying opportunities for improvement and in testing change ideas. An issue with this approach is that changes often require multiple tests to determine benefit; the goal of improvement is *reliable* high performance (Provost & Murray, 2011). Because multiple, diverse tests were carried out across relatively few testing opportunities, not enough tests of single change ideas were carried out to determine whether specific changes uniquely contributed to beneficial outcomes. In line with this caution, the factors described in this report represent useful building blocks for future virtual instructional coaching models requiring future testing and refinement on the part of researchers, coaches, and teachers.

## References

- Aguilar, E. (2013). *The art of coaching: Effective strategies for school transformation*. San Francisco, CA: Jossey-Bass.
- Atteberry, A. & Bryk, A. S. (2011). Analyzing teacher participation in literacy coaching activities. *The Elementary School Journal*, 112(2), 356-382.
- Bennett, B., & Provost, L. (2015, July). What's your theory? Driver diagram serves as tool for building and testing theories for improvement. *Quality Progress*, 36-43.
- Berwick, D. M. (2008). The science of improvement. *JAMA*, 299(10), 1182-1184.
- Biancarosa, G., Bryk, A. S., & Dexter, E. R. (2010). Assessing the value-added effects of literacy collaborative professional development on student learning. *Elementary School Journal*, 111(1), 7-34.
- Bryk, A. S., Gomez, L. M., & Grunow, A. (2011). Getting ideas into action: Building networked improvement communities in education. In *Frontiers in sociology of education* (pp. 127-162). Springer Netherlands.
- Bryk, A. S., Gomez, L. M., Grunow, A., & LeMahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better*. Cambridge, MA: Harvard Education Press.
- Bryk, A. S., & Schneider, B. (2002). *Trust in schools: A core resource for improvement*. New York, NY: Russell Sage.
- Deming, W. E. (1986). *Out of the crisis*. Cambridge: Massachusetts Institute of Technology, Center for Advanced Engineering Study.
- Ippolito, J. (2010). Three ways that literacy coaches balance responsive and directive relationships with teachers. *Elementary School Journal*, 111(1), 164-190.
- Kosovich, J. J., Hulleman, C. S., Barron, K. E., & Getty, S. (2014) A practical measure of student motivation: Establishing validity evidence for the expectancy-value-cost scale in middle school. *The Journal of Early Adolescence*. doi:10.1177/0272431614556890
- Langley, G. J., Moen, R., Nolan, K. M., Nolan, T. W., Norman, C. L., & Provost, L. P. (2009). *The improvement guide: A practical approach to enhancing organizational performance*. New York, NY: Jossey-Bass.
- Lewis, C. (2015). What is improvement science? Do we need it in education? *Educational Researcher*, 44(1), 54-61.
- Myung, J., & Martinez, K. (2013). *Strategies for enhancing the impact of post-observation feedback for teachers*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.
- Park, S., & Takahashi, S. (2003). *90-day cycle handbook*. Stanford, CA: Carnegie Foundation for the Advancement of Teaching.
- Penuel, W. R., Fishman, B. J., Cheng, B. H., & Sabelli, N. (2011). Organizing research and development at the intersection of learning, implementation, and design. *Educational Researcher*, 40, 331-337.
- Provost, L. P., & Murray, S. (2011). *The health care data guide: learning from data for improvement*. New York, NY: Jossey-Bass.
- Russell, J., Jackson, K., Krumm, A. E., & Frank, K. (2013). Theories and research methodologies for design-based implementation research: Examples from four cases. In B. J. Fishman, W. R. Penuel, A.-R. Allen & B. H. Cheng (Eds.), *Design based implementation research: Theories, methods, and exemplars. National Society for the Study of Education Yearbook* (Vol. 112, Issue 2, pp. 157-191). New York: Teachers College Press.

Yeager, D. S., Purdie-Vaughns, V., Garcia, J. Apfel, N. Brzustoski, P., Master, A., Hessert, W. T., & Williams, M. E. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology*, 143(2), 802-824.

**Appendix A**  
**VIC Network's Driver Diagram**

## AIM

## Primary Drivers

## Secondary Drivers

*Advancing PBL teaching through effective instructional coaching*

Using a virtual coaching model, all participating teachers will progress 1 level—based on mutual agreement between teacher and coach—on 2 jointly defined teaching practices on the PBL Teaching Framework by June 1<sup>st</sup> 2016.

Coach and teacher develop a trusting relationship.

Teacher and coach organize their interactions around virtual cycles of inquiry.

Teachers value coaching and KIA curriculum.

Coach participates in ongoing professional development to improve his or her own coaching practice.

School environment is supportive of PBL instruction and instructional coaching.

Coach and teacher jointly define roles, responsibilities, and goals for coaching.

Coach provides feedback that supports teacher identity and improve specific elements of PBL teaching.

Cycles of inquiry are meaningfully connected over time.

Technology platforms are available that support synchronous and asynchronous communication between coach and teacher and provide opportunities for teachers to share artifacts from practice.

Coaches maintain regular contact with BIE and participates in monthly check-ins with other coaches.

Coaching sessions are not associated with teacher evaluation.

Coaching activities are integrated with other feedback that teachers receive in the school.

Coaching time is “protected.”

## **Appendix B**

### **VIC Network's Promising Practices Document**

This document was provided to instructional coaches as an initial set of change ideas that they could implement with teachers. Coaches were assigned the document as reading and then selected an idea to implement as one of their first PDSA cycles.

# Promising Practices<sup>1</sup>

This document details strategies that coaches can try out in their instructional coaching. This file is intended to be a living document that catalogues the collective efforts of the PBL Virtual Instructional Coaching NIC.

[Wise Feedback](#)

[Engaging Reluctant Teachers](#)

[Using a Teacher's Video During Post-Observation](#)

[LER Portal Discussion Prompts](#)

[Implementation Intentions](#)

## Wise Feedback

**What is it:** An approach to framing feedback on evidence from practice between a coach and teacher; it is intended to communicate (1) that you have high standards for the teacher, (2) that you believe the teacher can reach that standard, and (3) the specific steps that he or she can take to meet the standard you have set. Receiving feedback can be a vulnerable experience, and, in certain relationships, such as coaching, there can be an implicit power imbalance between the one receiving and giving feedback. As a coach, attending to this power dynamic through the “wiseness” of the feedback that you provide is particularly important when the feedback is “critical” in some way. Framing feedback in terms of high expectations and assurances that they can reach those expectations increases the probability that feedback is interpreted as an opportunity to improve and that the specific steps detailed in the feedback are followed through on. For this coaching practice, we provide example *sentence starters*.

**Rationale:** Teachers can interpret critical feedback in a negative or personal way. Wise feedback conveys respect while acknowledging opportunities for improvement. Importantly, wise feedback builds on the norms you established with the teacher from the **introductory email** and **initial meeting**. Wise feedback addresses two factors affecting coaching: (1) trust and (2) how individuals receiving feedback attribute the motivations of the one providing feedback (Yeager et al., 2014).<sup>2</sup>

**When to use:** Use wise feedback phrases when providing critical feedback on teachers' evidence from practice that they submit as part of ongoing cycles of inquiry. Wise feedback phrases can be used in either written or verbal form. Providing written feedback may offer the

---

<sup>1</sup> The term and organization of our *promising practices* document were informed by researchers at the Carnegie Foundation for the Advancement of Teaching, namely, Rachel Beattie and her Productive Persistence team.

<sup>2</sup> Yeager, D. S., Purdie-Vaughns, V., Garcia, J. Apfel, N. Brzustoski, P., Master, A., Hessert, W. T., & Williams, M. E. (2014). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology*, 143(2), 802-824.

easiest way to test out this change strategy. Whenever providing feedback to a teacher, It is important to provide specific steps a teacher take following the identification of an opportunity to improve; communicating that you have high standards for the teacher and that you believe he or she can meet those standards is important to incorporate into your feedback if (1) trust is in question between you and the teacher or (2) you observed something in his or her evidence from practice that you feel needs to be addressed and the teacher has not yet attended to it.

**Sentence starters:** Below, are examples of wise feedback as well as examples of feedback that are not wise. These sentence starters are intended to help you in thinking about how to structure your feedback; please adapt as needed in developing your own wise feedback statements. Importantly, these sentence starters only capture (1) that you have high standards for the teacher and (2) that you believe the teacher can reach that standard. Remember that wise feedback also includes specific steps a teacher can take in order to improve.

### **Wise Feedback**

- “As coaches we have set high standards for PBL teaching, and I know that you can meet them.”
- “I hope these comments are helpful. I wouldn’t give you this feedback if I didn’t think that you could \_\_\_\_.”
- “Project based teaching is challenging. You are making great progress on \_\_\_\_.”

### **“Unwise” Feedback**

- “I am giving you these comments so that you have feedback on your \_\_\_\_.”
- “Overall, nice job. I have suggested several areas that could be improved.”
- “This teaching practice is really challenging for some teachers. Not everyone can do it.”
- “Just keep trying.”

## **Engaging Reluctant Teachers**

**What is it:** This strategy is an approach to help promote productive engagement and communication with teachers who appear to be reluctant to fully commit to the instructional coaching process. Engagement is a prerequisite for any activity or relationship; you cannot work with someone who is not working with you. There are a variety of reasons that teachers may be reluctant to engage actively in instructional coaching, such as believing that the coaching process will somehow be used to evaluate them negatively, not being confident in the coach or his/her expertise, or feeling a lack of personal confidence in being able to improve his/her own teaching practice. One of our change ideas for this project is to have instructional coaches work with teachers to discuss and address (as much as they can) the motivations behind teacher reluctance to promote higher levels of teacher engagement in the instructional coaching relationship.

**Rationale:** One of the major barriers to addressing teacher reluctance is avoiding discussing this topic with the teachers themselves. Uncovering, understanding, and addressing the underlying concerns that teachers have can often result in increased rapport and trust between

teachers and coaches, increased engagement from the teacher in the coaching process, and overall increased effectiveness of the instructional coaching process. However, addressing these issues can often result in either or both of the teachers and coaches feeling as if the other is being confrontational, aggressive, or critical. The focus of this change idea is to support teachers and coaches in having productive, open, safe discussions that will (i) help teachers feel comfortable sharing their concerns and motivations with the coach and (ii) help coaches better understand the teachers they are working with and better empower them to work collaboratively with teachers in addressing their concerns.

**When to use:** These conversation prompts should be used when you sense that a teacher may not be fully engaged in a conversation, the coaching process in general, or something along these lines. Depending on your rapport with the teacher, you may find it best to use these during a live conversation with the teacher (one of your scheduled one-on-one video chat meetings, or during a phone call, etc.) or you may find it best to use these over email or another asynchronous/non-live conversation with the teacher. No matter how you use them, be certain that the language around them is warm, friendly, and tentative.

**Specific change ideas:** Some of these ideas have been adapted from Sweeney (2013).<sup>3</sup>

If you are sensing that a teacher is not fully engaged or is holding back during a coaching conversation, try...

- “It seems like you might have something on your mind. Is there something you’d like to talk about?”
- “I’m getting the feeling that there’s something you might be worried or concerned about. Am I reading you correctly? Would you like to share what you’re feeling right now so that we can talk about it?”

If you are sensing that a teacher is overwhelmed and/or may not have the time, attention, etc. to fully and actively participate in the coaching process, try...

- “It seems like you have a lot on your plate right now. Do you want to take a few minutes to talk about what’s going on in your classroom and your school?”
- “How is the virtual coaching process working for you? Is there something that you feel is getting in the way of this being a smoother process for you?”

If you are sensing that a teacher may lack the personal confidence that he/she can succeed in improving his/her teaching practice, try...

- “Over the past few minutes it looks like you became somewhat nervous about what we were talking about in terms of next steps. Can you tell me how you’re feeling right now? Is there something that you might be worried about?”
- “I’m hearing you say that this is something that you want to work on, but in hearing you talk about this I’m getting the feeling like you might be worried about it at the same time.

---

<sup>3</sup> Sweeney, D. R. (2013). *Student-centered coaching at the secondary level*. Thousand Oaks, CA: Corwin Press.

Is this the right thing to be working on? Are you concerned that this might be biting off more than you can chew right now?"

If you are sensing that a teacher may not trust you or that your suggestions may not be in the best interests of his/her students, try...

- "As we've been talking, it seems like there might accidentally be doing something that isn't sitting well with you. Did something I say upset you? Or is there something that I'm doing or not doing that would make it easier for us to work together? I would be completely comfortable with taking a few minutes to talk through what's working or not working for you right now."
- "What I'd like to do right now is have a 'check in' with you about how you feel we are working together. Do you feel like our coaching cycles are supporting you in improving your teaching practice? Do you think that my ideas and suggestions are helpful? Or do you feel like I'm not being as helpful as I could be? I'd really like to talk about anything that you have on your mind or have been thinking about over the past few weeks."

## Using a Teacher's Video During Post-Observation

**What is it:** Two strategies, questioning and pivotal pausing, for jointly viewing a video with a teacher during a post-observation meeting.

**Rationale:** As you work with a teacher in a post-observation meeting, it can be useful to structure how you will review a video that a teacher has posted to the LER Portal.

**When to use:** During post-observation meeting with teacher. It is potentially best used in combination with comments that you have logged based on your note-taking form.

This change idea was adapted from a video observation protocol from the Best Foot Forward Project.<sup>4</sup>

### Questioning

- This strategy can be helpful in going from low inference observations that you have made using your note-taking form and LER Portal comments to elicit what a teacher was thinking or information related to what has transpired in previous lessons that may have contributed to what you saw in the current video.
- Questions could include the following:
  - What made you decide to...
  - What were you thinking in that moment?
  - How did that match up to what you expected?
  - When you say X... what do you mean?
  - How do you think that went?

---

<sup>4</sup> [http://cepr.harvard.edu/files/cepr/files/1.\\_leveraging\\_video\\_for\\_learning.pdf](http://cepr.harvard.edu/files/cepr/files/1._leveraging_video_for_learning.pdf)

- Tell me about your decision to...

### **Pivotal Pausing**

- This strategy involves either a coach and teacher jointly viewing and then pausing a video at important points in the lesson. These moments may be the same ones that you identified or they may come from the teacher during your post-observation discussion. The goal is to pause a video at important moments discuss as a coach-teacher pair. The goal is not to focus on moment-to-moment criticisms either from a coach's or teacher's perspective.
  - Play a point in the video that you have previously identified or a teacher has identified prior to the meeting. Stop the video at a moment where the teacher self-identifies a missed opportunity or a pivotal event in the lesson. Have the teacher describe what transpired and specific strategies that he or she could try in later lessons.

## LER Portal Discussion Prompts

**What is it:** This strategy is focused on encouraging more active engagement between KIA teachers on (1) sharing their ideas about the curriculum, (2) talking about their adaptations, and (3) encouraging peer interaction and peer support more generally. Teachers report that communication and support from their peers is often quite helpful and actionable in terms of improving their teaching practice. In particular, teachers who have common experiences with the same curriculum are often able to empathize with one another and provide more specific, more helpful suggestions and ideas. Specific to the LER portal, teachers report that they often do not have the time or comfort to create their own posts from scratch. One of our change ideas is to have instructional coaches provide some structure to the LER discussion spaces to hopefully cause an increased level of engagement from teachers.

**Rationale:** Some of the barriers to active online discussion and communication are (i) the time it takes to start a discussion, (ii) the comfort level of sharing personal experiences, thoughts, etc. in a discussion, and (iii) the uncertainty around social norms for discussions with people who do not have the same professional and social context. The specific change ideas below work to address each of these barriers. Some of the change ideas work to address the barriers through creating communication structures over time. Other change ideas are designed to be implemented more "as needed," such as in response to questions raised during the instructional coaching process or in response to other comments in the LER portal.

**Specific Change Idea #1:** Create "check-in" discussion prompts to encourage regular discussion.

**When to use:** On a set schedule, either based on time (e.g., every week) or place in the curriculum (e.g., at the end every third lesson).

**How to use:** Check-in discussion prompts should have the following core elements:

1. Warm welcome
2. Clear objective connected to the curriculum
3. Between one and three specific questions that could be quickly answered without preparation

**Examples:**

- “Happy Monday morning! I hope that everyone had a good weekend and is ready to go for the upcoming week. I wanted to do another weekly check-in to see how people are feeling about the upcoming week’s lessons. Please take a quick minute to reply with (i) the task and lessons you’re working on this week, (ii) what you’re looking forward to the most this week, and (iii) any questions you might have about the activities for this week. Thank you in advance for your replies!”
- “Good afternoon, everyone! It seems like everyone is now finished with Elections Task 3 about Primary Elections. This collection of lessons was focused on having students divide up into four groups (interest groups, political parties, media, campaign teams) and also conduct a mock primary debate. What were the best parts of the primary election task? Which activities or lessons were the most challenging to teach? Did you make any adaptations to help with this unit? Let us know!”

**Specific Change Idea #2:** Respond supportively to teachers’ comments and posts.

**When to use:** When you notice a teacher posted a new discussion topic or made a new discussion comment that no one has replied to yet.

**How to use:** A supportive reply should have the following core elements:

1. Warm appreciation that the teacher posted his/her topic/comment.
2. Emotionally appropriate acknowledgement (e.g., happiness for a celebratory topic, sympathy for a frustrated topic)
3. Sharing of a personal experience, personal suggestion, etc.
4. Open invitation for future communication.

**Examples:**

- “I am so sorry to hear that your students are struggling so much with this task, yet also so glad that you reached out for support. I completely hear you on how much of a struggle it can be to keep the course on-schedule so that your students are prepared for the AP test while also grappling with having students of very different skill levels. My district has an ‘open access’ policy for AP courses, meaning any student can enroll in them, and I’ve had to cut out significant portions of the curriculum at times to ensure that all of my students were successful in the class. Something that worked well for me is

rethinking all of my written materials so that students only have what they need and nothing more. It can take a significant amount of time to edit down all of the different materials, but it greatly helps with reducing confusion and not flooding students with more than they can handle. Hang in there! And please post again soon to let us know if things have gotten better for you!" [paraphrased from a discussion thread for APES]

## Implementation Intentions

**What is it:** A series of prompts for you to use with teachers when planning out next steps for them to take in their classrooms. The goal is to move from a goal-state (e.g., "I want my students to work better in groups") to a specific situation (e.g., "Next time I introduce group work, I will have each student take on one of four roles that I will provide."). During post-observation meetings, it will be important to have teachers phrase goals as concrete actions that they can implement in specific situations in order to achieve their goals: "I intend to do y when situation z is encountered."

**Rationale:** Many people fail to reach their goals: (1) it can be difficult to figure out what one should do first, (2) routine situations may prompt routine behaviors that deflect one from their goals, or (3) it is easy to miss opportunities or situations that could lead achieving one's goals. One way to overcome this is to pair goal intentions with *implementation intentions*, which are concrete actions one will take in specific specific situations.

**When to use:** During a post-observation meeting, and in particular, during discussions of "next steps."

Evidence for the effectiveness of this approach comes from Gollwitzer & Brandstatter (1997).<sup>5</sup>

**How to use:** As you are discussing next steps with teachers, frame this point in the post-observation meeting as follows:

- "In order to improve up on the things that we have talked about in this meeting, it can be important to be clear on when, where, and what. Let's try and get concrete about situations where you can take action toward your goals. Let's frame them as follows: 'In relation to PBL teaching practice X, when I am in situation Y, I will do Z.'"

---

<sup>5</sup> Gollwitzer, P. M., & Brandstätter, V. (1997). Implementation intentions and effective goal pursuit. *Journal of Personality and Social Psychology*, 73(1), 186-199.

## Appendix C

### Network Website Overview

On the VIC network's Google Site, teachers and coaches were given access to various forms, resources, and schedules to manage coaching activities. Figure 1 represents that homepage for the website. On the left-hand side, teachers, coaches and hub members (i.e., representatives from SRI, LER, and BIE) could access the overall **schedule** for the network, including each node's school calendar, cycles of inquiry tempo, SRI data collection activities (i.e., surveys and interviews), and coach professional development sessions. Along with the schedule, network members could access **contact information** that included emails, addresses, time zones. All network members had access to the working theory for improvement in the form of the **driver diagram**. In addition, the 90-day scan was provided for easy access and a link to resources on improvement science, instructional coaching, and project-based learning were provided. Lastly, text on the homepage represented the NIC's charter, which specified the goals of the network, responsibilities of network members, and initial answers to the three *Model for Improvement* questions.

Figure 1. Homepage

Virtual Instructional Coaching NIC

Search this site

<b>Overview</b>	<b>Overview</b>
Schedule	The goal of the PBL Virtual Instructional Coaching Networked Improvement Community (NIC) is to identify high quality, scalable virtual instructional coaching practices for supporting teachers in using the Knowledge in Action (KIA) AP Environmental Science (APES) and KIA AP U.S. Government (APGOV) courses. Seven organizations will leverage their collective expertise in working together to develop and test elements of a virtual instructional coaching model: Lucas Education Research (LER), New Tech Network (NTN), New Visions for Public Schools (NVPS), Des Moines Public Schools (DMPS), Abraham Lincoln High School in San Jose (ALHS), Buck Institute for Education (BIE), and SRI International (SRI).
Contact Information	
Driver Diagram	
90-Day Scan	
Resources	
<b>Teacher &amp; Coach Materials</b>	A key element of the NIC is a <a href="#">working theory for improvement</a> . We have collaboratively created and refined our working theory in the form of a <a href="#">driver diagram</a> , which helps to answer three questions core questions:
Teacher Materials	<ol style="list-style-type: none"><li>1. What are we trying to accomplish?</li><li>2. How will we know that a change is an improvement?</li><li>3. What changes can we make that will result in improvement?</li></ol>
Coach Materials	<b>Leadership Team and Governance</b>
NIC Hub	The leadership team, as illustrated in Figure 1, is the hub of the network, which is comprised of representatives from SRI, BIE, and LER. The responsibilities of the leadership team include communicating the aims of the NIC, distributing resources to network members, and finalizing recommendations for effective virtual coaching (other responsibilities are described below). The leadership team will hold weekly conference calls to discuss NIC activities throughout the project starting in September.

### Teacher & Coach Materials

In the Teacher & Coach Materials section of the website, teachers and coaches were given access to various forms. Each teacher-coach pair had access to their own files, which included pre-observation forms, video observation note taking forms, and post-observation forms. These forms were key to carrying out virtual coaching activities as they structured coaching meetings.

### Teacher Materials

In the Teacher Materials section, teachers were provided with documentation on using the video camera and best practices for collecting videos of instruction, an overview manual detailing the cycles of inquiry approach and their individual responsibilities, and a copy of BIE's Project Based Teaching Rubric.

### Coach Materials

In the Coach Materials section, coaches were provided with the following: A overview of coaching document, a Google Spreadsheet to document the completion date for coaching activities, an introductory email routine, an initial meeting protocol, a copy of BIE's Project Based Teaching Rubric, and a document describing strategies that you can try out to continuously improve the virtual instructional coaching model.

**Appendix D**  
**Original Coaching Forms**

# CYCLE 1 Pre-Observation Work Plan

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

## **COACH: COMPLETE BEFORE PRE-OBSERVATION MEETING**

**Which two practices of the PBL Teaching Rubric is the teacher focusing on this semester? How did the teacher score him- or herself?**

*Refer back to your notes from your initial meeting with the teacher.*

- |                             |                                          |
|-----------------------------|------------------------------------------|
| ● Design & Plan             | [Beginning   Developing   Gold Standard] |
| ● Align to Standards        | [Beginning   Developing   Gold Standard] |
| ● Build the Culture         | [Beginning   Developing   Gold Standard] |
| ● Manage Activities         | [Beginning   Developing   Gold Standard] |
| ● Scaffold Student Learning | [Beginning   Developing   Gold Standard] |
| ● Assess Student Learning   | [Beginning   Developing   Gold Standard] |
| ● Engage & Coach            | [Beginning   Developing   Gold Standard] |

**What were the next steps you both agreed to carry over from your previous cycle of inquiry?**

*Refer back to the previous cycle's post-observation debrief form.*

*N/A if this is your first cycle of inquiry.*

<replace this text>

## **COACH AND TEACHER: COMPLETE DURING YOUR PRE-OBSERVATION MEETING**

**RECORD THE PRE-OBSERVATION MEETING IN ZOOM**

**What is the PBL Teaching Rubric practice that we will focus on during this cycle of inquiry?**

- Design & Plan
- Align to Standards
- Build the Culture
- Manage Activities
- Scaffold Student Learning
- Assess Student Learning

- Engage & Coach

**What is the specific instructional strategy, technique, etc. that we will be working on during this cycle of inquiry?**

<replace this text>

**What is the “theory of action” for behind why this instructional strategy, technique, etc. will be helpful to your students?**

*Co-develop this together so that you both have similar understandings for why this specific practice is important.*

**“If I do...**

<replace this text>

**Then the students will...**

<replace this text>

**Which will help with their learning because...**

<replace this text>.”

**What are the teacher and students behaviors that we agree to use in measuring whether or not the teacher was successful in using this instructional strategy, technique, etc.?**

*Be sure to include indicators for both teachers and students.*

*For example, “Betsy [teacher] will be successful in using wait time if she consistently waits ten seconds after asking a question.*

*Using more wait time after asking questions will help with student engagement if almost every question asked by Betsy is answered by a student without Betsy having to give any hints.”*

<what are the indicators for the teacher?>

<what are the indicators for the students?>

**What are the most important parts of the lesson to concentrate on in looking for the indicators mentioned above?**

<replace this text>

**What will the coach do to support the teacher in being successful with the goal for this cycle of inquiry?**

*What does the teacher say he/she needs from the coach for support?*

<replace this text>

**What date will the teacher record and upload the video for this cycle of inquiry?**

*The teacher should also send the coach a copy of the lesson plan for the lesson to be recorded.*

<replace this text>

**What date will the coach review the recorded video and provide the teacher with written feedback in the LER coaching portal?**

<replace this text>

**What date will we meet for the post-observation meeting?**

<replace this text>

# CYCLE 1 Video Observation Note-taking

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

## **COACH: COMPLETE BEFORE VIEWING THE VIDEO**

**What is the PBL Teaching Rubric practice that the teacher is focusing on during this cycle of inquiry?**

*Refer back to your pre-observation form for this cycle.*

<replace this text>

**What is the specific instructional strategy, technique, etc. that the teacher will be working on during this cycle of inquiry?**

*Refer back to your pre-observation form for this cycle.*

<replace this text>

**What is the agenda for this lesson? What are the major activities for this lesson?**

*Refer to the teacher's lesson plan for the recorded lesson.*

<replace this text>

**What indicators am I looking for when viewing this video?**

*Refer back to your pre-observation form for this cycle.*

*Review the "PBL Teaching 'Look For's" resource in the coaching packet for further ideas.*

<replace this text>

## **COACH: COMPLETE WHILE VIEWING THE VIDEO**

**While viewing the video, record key observations in the organizer below. Document teacher actions and student actions based on the indicators listed above.**

Timestamp	Teacher Behaviors	Student Behaviors



## CYCLE 1 POST-Observation Debrief Organizer

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

### **COACH: COMPLETE BEFORE POST-OBSERVATION MEETING**

**What is the PBL Teaching Rubric practice that the teacher is focusing on during this cycle of inquiry?**

*Refer back to your pre-observation form for this cycle.*

<replace this text>

**What is the specific instructional strategy, technique, etc. that the teacher will be working on during this cycle of inquiry?**

*Refer back to your pre-observation form for this cycle.*

<replace this text>

### **COACH AND TEACHER: COMPLETE DURING YOUR POST-OBSERVATION MEETING**

#### **RECORD THE POST-OBSERVATION MEETING IN ZOOM**

**What is the teacher's self-assessment for how well he/she achieved his/her goal for this cycle of inquiry?**

<replace this text>

**What observations, evidence, indicators, etc. are we referring to in describing the instructional strategy, technique, etc. for this cycle of inquiry?**

*Think about how you would answer "how do you know?" questions.*

<replace this text>

**What specific actions, instructional strategies, etc. do we think would be helpful in supporting the continued development of the teacher's specific focus for this cycle?**

<replace this text>

**What are the “next steps” that we want to carry over into the next cycle of inquiry?**

*Do you and the teacher want to maintain the same specific area of focus in the next cycle?*

*Do you and the teacher want to work on the same teaching practice but with a different specific focus?*

*Do you and the teacher think that working on a different teaching practice would be a good idea?*

*What key learnings do you and the teacher want to remember in working through your next cycle of inquiry?*

<replace this text>

**What date will we meet for the next pre-observation meeting?**

<replace this text>

**Appendix D**  
**Revised Coaching Forms**

## Meeting 1: Planning for CYCLE 1

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

**COACH AND TEACHER: COMPLETE DURING YOUR MEETING**  
**RECORD THE MEETING IN ZOOM**

### FOCUS OF CYCLE 1

**What is the teaching practice that we will focus on during this cycle of inquiry?**

*Refer to the Teacher Self-Assessment for possible areas of growth.*

<replace this text>

**What is the specific instructional strategy, technique, etc. that we will be working on during this cycle of inquiry?**

<replace this text>

**What is the “theory of action” for behind why this instructional strategy, technique, etc. will be helpful to your students?**

*Co-develop this together so that you both have similar understandings for why this specific practice is important.*

**“If I do...**

<replace this text>

**Then the students will...**

<replace this text>

**Which will help with their learning because...**

<replace this text>.”

**What are the teacher and students behaviors that we agree to use in measuring whether or not the teacher was successful in using this instructional strategy, technique, etc.?**

*Be sure to include indicators for both teachers and students.*

*For example, "Betsy [teacher] will be successful in using wait time if she consistently waits ten seconds after asking a question. Using more wait time after asking questions will help with student engagement if almost every question asked by Betsy is answered by a student without Betsy having to give any hints."*

<what are the indicators for the teacher?>

<what are the indicators for the students?>

## PLANNING THE CO-WORKING SESSION FOR CYCLE 1

**What part(s) of the teaching practice does the teacher need the most support with?**

*What does the teacher say he/she needs from the coach for support?*

<replace this text>

**What will the coach do to support the teacher in being successful with the goal for this cycle of inquiry?**

*When will the supports be provided? In the co-working session? Over e-mail?*

*Will any resources, lesson plans, rubrics, etc. be exchanged between the teacher and the coach?*

<replace this text>

**What date and time will we meet for our co-working session?**

<replace this text>

## PLANNING THE VIDEO OBSERVATION FOR CYCLE 1

**What date will the teacher record and upload the video for this cycle of inquiry?**

*The teacher should also send the coach a copy of the lesson plan for the lesson to be recorded.*

<replace this text>

**What date will the coach review the recorded video and provide the teacher with written feedback in the LER portal?**

<replace this text>

**What date and time will we meet for the debrief meeting?**

<replace this text>

## Meeting 2: Co-working session for CYCLE 1

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

### **COACH AND TEACHER: COMPLETE DURING YOUR CO-WORKING MEETING**

#### **What are we working work on today in our co-working session?**

*Use this section for note-taking, as a running log, etc. of your co-working session as needed.*

<replace this text>

#### **What follow-up, if any, will the teacher and coach engage in?**

*Will any resources, lesson plans, rubrics, etc. be exchanged between the teacher and the coach?*

*Will any written feedback, notes, revisions, etc. be exchanged between now and the next live meeting?*

<replace this text>

#### **What dates will (a) the video be uploaded and (b) the coach provide written feedback in the LER portal (if changed from planning meeting)?**

<replace this text>

#### **What date and time will we meet for the debrief meeting (if changed from planning meeting)?**

<replace this text>

## Meeting 3: Debriefing CYCLE 1, Planning for CYCLE 2

Instructional Coach:	
Teacher:	
Date:	Start & End Times:

### **COACH AND TEACHER: COMPLETE DURING YOUR MEETING**

**RECORD THE MEETING IN ZOOM**

#### DEBRIEF OF CYCLE 1

**What is the teacher's self-assessment for how well he/she achieved his/her goal for this cycle of inquiry?**

<replace this text>

**What observations, evidence, indicators, etc. are we referring to in describing the instructional strategy, technique, etc. for this cycle of inquiry?**

*Think about how you would answer "how do you know?" questions.*

<replace this text>

**What specific actions, instructional strategies, etc. do we think would be helpful in supporting the continued development of the teacher for next cycle of inquiry?**

<replace this text>

#### FOCUS OF CYCLE 2

**What is the teaching practice that we will focus on during this cycle of inquiry?**

*Refer to the Teacher Self-Assessment for possible areas of growth.*

<replace this text>

**What is the specific instructional strategy, technique, etc. that we will be working on during this cycle of inquiry?**

<replace this text>

**What is the “theory of action” for behind why this instructional strategy, technique, etc. will be helpful to your students?**

*Co-develop this together so that you both have similar understandings for why this specific practice is important.*

**“If I do...**

<replace this text>

**Then the students will...**

<replace this text>

**Which will help with their learning because...**

<replace this text>.”

**What are the teacher and students behaviors that we agree to use in measuring whether or not the teacher was successful in using this instructional strategy, technique, etc.?**

*Be sure to include indicators for both teachers and students.*

*For example, “Betsy [teacher] will be successful in using wait time if she consistently waits ten seconds after asking a question.*

*Using more wait time after asking questions will help with student engagement if almost every question asked by Betsy is answered by a student without Betsy having to give any hints.”*

<what are the indicators for the teacher?>

<what are the indicators for the students?>

## **PLANNING THE CO-WORKING SESSION FOR CYCLE 2**

**What part(s) of the teaching practice does the teacher need the most support with?**

*What does the teacher say he/she needs from the coach for support?*

<replace this text>

**What will the coach do to support the teacher in being successful with the goal for this cycle of inquiry?**

*When will the supports be provided? In the co-working session? Over e-mail?*

*Will any resources, lesson plans, rubrics, etc. be exchanged between the teacher and the coach?*

<replace this text>

**What date and time will we meet for our co-planning session?**

<replace this text>

## PLANNING THE VIDEO OBSERVATION FOR CYCLE 2

**What date will the teacher record and upload the video for this cycle of inquiry?**

*The teacher should also send the coach a copy of the lesson plan for the lesson to be recorded.*

<replace this text>

**What date will the coach review the recorded video and provide the teacher with written feedback in the LER portal?**

<replace this text>

**What date and time will we meet for the debrief meeting?**

<replace this text>

## Appendix E Teacher Surveys

### Teacher Survey #1

Question
I know I can successfully implement the Knowledge in Action curriculum.
I believe I will be able to complete all of the Project Cycles in the Knowledge in Action curriculum.
I value the Knowledge in Action curriculum.
I don't have time to adequately plan for my Knowledge in Action lessons because of other responsibilities.
I believe the Knowledge in Action curriculum requires too much of my planning time.
Up to this point, the coaching process has been valuable to improving my teaching.
I think the Knowledge in Action curriculum will help my students succeed on the AP Exam.

### Teacher Survey #2

Question
It's OK to discuss my feelings, worries, and frustrations about my teaching with my coach.
My coach looks out for my personal welfare.
I take my coach at his or her word.
My coach helps to make the coaching cycles run smoothly.
My coach takes a personal interest in my professional development.
I feel respected as a teacher by my coach.
My coach has gone over and above what I perceived as his or her responsibilities.
I have confidence in the expertise of my coach.

### Teacher Survey #3

Question
I know I can successfully implement my coach's feedback.
I am confident that I can do what is required for participating in virtual coaching activities.
I value my coaching meetings.
I think my coaching meetings are useful.

Because of other responsibilities, I don't have time to put into coaching activities.
I'm unable to put in the time needed to engage in coaching activities.
Because of other responsibilities, I don't have time to put into coaching meetings.
Up to this point in the process, meeting with my coach has been valuable to improving my teaching.

Teacher Survey #4

Question
I know I can successfully implement the Knowledge in Action curriculum.
I believe I will be able to complete all of the Project Cycles in the Knowledge in Action curriculum.
I think the Knowledge in Action curriculum will help my students succeed on the AP Exam.
I value the Knowledge in Action curriculum.
I don't have time to adequately plan for my Knowledge in Action lessons because of other responsibilities.
I believe the Knowledge in Action curriculum requires too much of my planning time.
My coach looks out for my personal welfare.
I take my coach at his or her word.
My coach helps to make the coaching cycles run smoothly.
It's OK to discuss my feelings, worries, and frustrations about my teaching with my coach.
My coach takes a personal interest in my professional development.
I feel respected as a teacher by my coach.
My coach has gone over and above what I perceived as his or her responsibilities.
I have confidence in the expertise of my coach.
I am confident that I can do what is required for participating in virtual coaching activities.
I value my coaching meetings.
I think my coaching meetings are useful.
Because of other responsibilities, I don't have time to put into coaching activities.
I'm unable to put in the time needed to engage in coaching activities.
Meeting with my coach has been valuable to improving my teaching.

Based on the PBL Teaching Rubric, I progressed at least 1 level on 2 Teaching Practices.

**Appendix F**  
**BIE PBL Teaching Rubric**

# P R O J E C T   B A S E D   T E A C H I N G   R U B R I C

Project Based Teaching Practice	<b>Beginning PBL Teacher</b>	<b>Developing PBL Teacher</b>	<b>Gold Standard PBL Teacher</b>
<b>Design &amp; Plan</b>	<ul style="list-style-type: none"> <li>▶ Project includes some Essential Project Design Elements, but not at the highest level of the <i>Project Design Rubric</i>.</li> <li>▶ Plans for scaffolding and assessing student learning lack some detail; project calendar is not created, does not include enough detail, or is not followed.</li> <li>▶ Some resources for the project have not been anticipated or arranged in advance.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Project includes all Essential Project Design Elements, but some are not at the highest level of the <i>Project Design Rubric</i>.</li> <li>▶ Plans for scaffolding and assessing student learning lack some details; project calendar allows too much or too little time, or is followed too rigidly to respond to student needs.</li> <li>▶ Most resources for the project have been anticipated and arranged in advance.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Project includes all Essential Project Design Elements as described on the <i>Project Design Rubric</i>.</li> <li>▶ Detailed and accurate plans include scaffolding and assessing student learning and a project calendar, which remains flexible to meet student needs.</li> <li>▶ Resources for the project have been anticipated to the fullest extent possible and arranged well in advance.</li> </ul>
<b>Align to Standards</b>	<ul style="list-style-type: none"> <li>▶ Criteria for products are not derived from standards or specified clearly.</li> <li>▶ Scaffolding of student learning, critique and revision protocols, assessments and rubrics do not refer to or support student achievement of specific standards.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Criteria for some products are not specified clearly enough to provide evidence that students have met all targeted standards.</li> <li>▶ Scaffolding of student learning, critique and revision protocols, assessments and rubrics do not always refer to or support student achievement of specific standards.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Criteria for products are clearly and specifically derived from standards.</li> <li>▶ Scaffolding of student learning, critique and revision protocols, assessments and rubrics refer to and support student achievement of specific standards.</li> </ul>
<b>Build the Culture</b>	<ul style="list-style-type: none"> <li>▶ Norms are created to guide project work, but they may still feel like “rules” imposed and monitored by the teacher.</li> <li>▶ Students are asked for their ideas and given some choices to make, but infrequently or only about minor matters.</li> <li>▶ Students rarely work independently, and look to the teacher for guidance.</li> <li>▶ Student teams are often unproductive or require frequent intervention by the teacher.</li> <li>▶ Students feel like there is a “right answer” they are supposed to give, rather than asking their own questions and arriving at their own answers; they are fearful of making mistakes.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Norms to guide the classroom are co-crafted with students, which they are beginning to internalize.</li> <li>▶ Student voice and choice is encouraged through intentionally designed opportunities, e.g., when choosing teams, finding resources, using critique protocols, or creating products.</li> <li>▶ Students work independently to some extent, but tend to look to the teacher for direction more often than necessary.</li> <li>▶ Student teams are generally productive and are learning what it means to move from cooperation to effective collaboration; the teacher occasionally has to intervene or manage their work.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Norms to guide the classroom are co-crafted with students, which they largely self-monitor.</li> <li>▶ Student voice and choice is expected and ongoing, including identification of real-world issues and problems students want to address in projects.</li> <li>▶ Students usually know what they need to do and are directed by the teacher only to the extent necessary when working individually or in teams.</li> <li>▶ Students work collaboratively in healthy, high-functioning teams, much like an authentic work environment; the teacher rarely needs to be involved in handling problems.</li> </ul>

Project Based Teaching Practice	Beginning PBL Teacher	Developing PBL Teacher	Gold Standard PBL Teacher
<b>Build the Culture</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>▶ The values of critique and revision, persistence, rigorous thinking, and pride in doing high-quality work are not intentionally promoted.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Students understand there is more than one way to answer a driving question and complete the project, but are still cautious about proposing and testing ideas in case they are perceived to be “wrong.”</li> <li>▶ The values of critique and revision, persistence, rigorous thinking, and pride in doing high-quality work are promoted by the teacher but not yet owned by students.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Students understand there is no single “right answer” or preferred way to do the project, and that it is OK to make mistakes and learn from them.</li> <li>▶ The values of critique and revision, persistence, rigorous thinking, and pride in doing high-quality work are shared, and students hold each other accountable to them.</li> </ul>
<b>Manage Activities</b>	<ul style="list-style-type: none"> <li>▶ The classroom features some individual and team work time and small group instruction, but too much time is given to whole group instruction.</li> <li>▶ Classroom routines and norms for project work time are not clearly established or are not followed; time is not used productively.</li> <li>▶ Schedules, checkpoints, and deadlines are set, but they are loosely followed or unrealistic.</li> <li>▶ Teams are formed using either a random process (e.g., counting off) or students are allowed to form their own teams with no formal criteria.</li> </ul>	<ul style="list-style-type: none"> <li>▶ The classroom features individual and team work time, whole group and small group instruction, but one or more of these could be given more time.</li> <li>▶ Classroom routines and norms are established for project work time, but could be followed more closely to maximize productivity.</li> <li>▶ Realistic schedules, checkpoints, and deadlines are set, but more flexibility is needed.</li> <li>▶ Generally well-balanced teams are formed, but without considering the specific nature of the project; students have too much voice and choice in the process, or not enough.</li> </ul>	<ul style="list-style-type: none"> <li>▶ The classroom features a balanced mixture of individual and team work time, whole group and small group instruction.</li> <li>▶ Classroom routines and norms are followed during project work time to maximize productivity.</li> <li>▶ Realistic schedules, checkpoints, and deadlines are set but flexible.</li> <li>▶ Well-balanced teams are formed according to the nature of the project and student needs, with appropriate student voice and choice.</li> </ul>
<b>Scaffold Student Learning</b>	<ul style="list-style-type: none"> <li>▶ Students receive some instructional supports to access both content and resources, but many individual needs are not met.</li> <li>▶ Teacher may “front-load” content knowledge before the project launch, instead of waiting for “need to know” points during the project.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Most students receive instructional supports to access both content and resources, but some needs are not met.</li> <li>▶ Scaffolding is guided to some extent by student’s questions and “need to knows” but some of it may still be “front-loaded.”</li> </ul>	<ul style="list-style-type: none"> <li>▶ All students receive necessary instructional supports, removed when no longer needed, to access both content and resources.</li> <li>▶ Scaffolding is guided as much as possible by students’ questions; teacher does not “front-load” too much information at the start of the project, but waits until it is needed or requested by students.</li> </ul>

Project Based Teaching Practice	Beginning PBL Teacher	Developing PBL Teacher	Gold Standard PBL Teacher
<b>Scaffold Student Learning</b> <i>(continued)</i>	<ul style="list-style-type: none"> <li>▶ Key success skills are not taught intentionally; teacher may assume students are learning them as a side effect of the project.</li> <li>▶ Students are asked to do research or gather data, but without adequate guidance; teacher does not facilitate the generation of deeper questions based on information gathered.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Key success skills are taught, but students are not provided with adequate opportunities to practice success skills before applying them.</li> <li>▶ Student inquiry is facilitated and scaffolded, but more is needed; or, teacher may over-direct the process and limit independent thinking by students.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Key success skills are taught using a variety of tools and strategies; students are provided with opportunities to practice and apply them, and reflect on progress.</li> <li>▶ Student inquiry is facilitated and scaffolded, while allowing students to act and think as independently as possible.</li> </ul>
<b>Assess Student Learning</b>	<ul style="list-style-type: none"> <li>▶ Student learning of subject-area standards is assessed mainly through traditional means, such as a test, rather than products; success skills are not assessed.</li> <li>▶ Team-created products are used to assess student learning, making it difficult to assess whether individual students have met standards.</li> <li>▶ Formative assessment is used occasionally, but not regularly or with a variety of tools and processes.</li> <li>▶ Protocols for critique and revision are not used, or they are informal; feedback is superficial, or not used to improve work.</li> <li>▶ Students assess their own work informally, but the teacher does not provide regular, structured opportunities to do so.</li> <li>▶ Rubrics are used to assess final products, but not as a formative tool; or, rubrics are not derived from standards.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Project products and other sources of evidence are used to assess subject-area standards; success skills are assessed to some extent.</li> <li>▶ Individual student learning is assessed to some extent, not just team-created products, but teacher lacks adequate evidence of individual student mastery.</li> <li>▶ Formative assessment is used on several occasions, using a few different tools and processes.</li> <li>▶ Structured protocols for critique and revision and other formative assessments are used occasionally; students are learning how to give and use feedback.</li> <li>▶ Opportunities are provided for students to self-assess their progress, but they are too unstructured or infrequent.</li> <li>▶ Standards-aligned rubrics are used by students and the teacher to guide both formative and summative assessment.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Project products and other sources of evidence are used to thoroughly assess subject-area standards as well as success skills.</li> <li>▶ Individual student learning is adequately assessed, not just team-created products.</li> <li>▶ Formative assessment is used regularly and frequently, with a variety of tools and processes.</li> <li>▶ Structured protocols for critique and revision are used regularly at checkpoints; students give and receive effective feedback to inform instructional decisions and students' actions.</li> <li>▶ Regular, structured opportunities are provided for students to self-assess their progress and, when appropriate, assess peers on their performance.</li> <li>▶ Standards-aligned rubrics are used by students and the teacher to guide both formative and summative assessment, and to guide students to deeper levels of thinking.</li> </ul>

Project Based Teaching Practice	Beginning PBL Teacher	Developing PBL Teacher	Gold Standard PBL Teacher
<b>Engage &amp; Coach</b>	<ul style="list-style-type: none"> <li>▶ Project goals are developed without seeking student input.</li> <li>▶ Students are willing to do the project as if it were another assignment, but the teacher does not create a sense of ownership or fuel motivation.</li> <li>▶ The driving question is presented at the project launch and student questions are generated, but they are not used to guide inquiry or product development.</li> <li>▶ Expectations for the performance of all students are not clear, too low, or too high.</li> <li>▶ Students are not closely observed or interacted with, so some of their needs are not identified.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Project goals and benchmarks are set with some input from students.</li> <li>▶ Students are excited by the project and motivated to work hard by the teacher's enthusiasm and commitment to their success.</li> <li>▶ Students' questions guide inquiry to some extent, but some are answered too quickly by the teacher; students occasionally reflect on the driving question.</li> <li>▶ Appropriately high expectations for the performance of all students are set and communicated by the teacher.</li> <li>▶ Student needs for further instruction or practice, additional resources, redirection, troubleshooting, praise, encouragement, and celebration are identified through relationship-building and close observation and interaction.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Students and teachers, as appropriate for the students' age, co-define goals and benchmarks for the project, (e.g., by co-constructing a rubric) guided by standards.</li> <li>▶ Students' enthusiasm and sense of ownership of the project is maintained by the shared nature of the work between teachers and students.</li> <li>▶ Student questions play the central role in driving the inquiry and product development process; the driving question is actively used to sustain inquiry.</li> <li>▶ Appropriately high expectations for the performance of all students are clearly established and shared by teachers and students.</li> <li>▶ Student needs are identified and met not only by the teacher but by students themselves or other students, acting independently.</li> </ul>

## **Appendix G**

### **Introductory Email and Meeting Protocols**

## Introductory Email Routine

**What is it:** An email template for introducing yourself to a teacher. Many coaches and coaching resources point to the importance of establishing a relationship before engaging in coaching conversations. The most important objective of this email is to begin establishing rapport and a date and time for your virtual conversation where further relationship building will occur.

**Rationale:** Your initial email is the teacher's first introduction to your instructional coaching relationship. The goal is to make a positive, personal, and productive initial contact. The teacher you are working with may be anxious to receive coaching, to be teaching project-based curriculum for the first time, or to be working with someone entirely through online media. The teacher may also be excited and open to your collaboration. A strong email introduction can start things off on the right foot.

### Template for Introductory Email

1. First paragraph: Introduction
  - a. Introduce yourself by sharing your name and identifying yourself as a coach with the Buck Institute of Education.
  - b. Share where and what you teach, how long you've been a teacher, and how long you've been an instructional coach and/or taught the KIA curriculum.
  
2. Second paragraph: Scheduling the first live conversation
  - a. Tell the teacher you want to schedule a 60 minute online video conversation to get to know each other better, provide an overview of coaching activities, and foreshadow self-assessment on the PBL Teaching Rubric.
    - i. Send a copy to the PBL Teaching Rubric
      1. <https://drive.google.com/file/d/0Bw3hCLI2NAHyVTcxRHVpRIhiZWs/view>
    - ii. Send a copy of the "Teacher Overview of Coaching"
      1. <https://docs.google.com/document/d/1idwEJdXNtRR6znIXK6QjbfhM3pCR7prwsKRsaO4R5PY/edit>
  - b. Suggest dates and times for the week of **January 31-February 6** that you would be available for this conversation.
  - c. Share that you will be connecting using Zoom. And let them know that
    - i. Send Link to Zoom Download
      1. General information:
        - a. <https://support.zoom.us/hc/en-us/categories/200101697-Getting-Started>
      2. Specific "getting set up" information:
        - a. <https://support.zoom.us/hc/en-us/articles/201362033-Getting-Started-on-PC-and-Mac>

3. Third paragraph: Project-based learning
  - a. Tell the teacher how long you've been teaching project-based learning and how long you've specifically been using the Knowledge In Action (KIA) curriculum.
    - i. OPTIONAL: Share something you like specifically about project-based learning. (E.g., "Every year I find myself appreciating seeing my students grow as independent, self-motivated learners who are able to both ask and answer their own questions in the classroom.")
  - b. End the paragraph with a positive statement showing interest in the teacher you'll be working with. (E.g., "I'm looking forward to learning about your experiences with PBL over the past semester and hearing what you think about the curriculum.")
4. Fourth paragraph: Invitation, contact information
  - a. Invite the teacher to send any questions, thoughts, etc. that they might already have to you.
  - b. Give the teacher your preferred contact information: email address, phone number, Google account information (for Google Hangouts), Skype username (for Skype), etc.
5. Closing
  - a. Reiterate that you are looking forward to working with the teacher over the rest of the school year.
  - b. Gently remind the teacher about your upcoming first online conversation. (E.g., "I wish you all the best between now and our first online meeting.")

## Initial Meeting Protocol

**What is it:** A protocol to use in your follow up conversation from your introductory email. This protocol is specifically geared toward you learning more about the teacher and providing an opportunity for him or her to ask you questions about the coaching process. By the end of the conversation, you want to ensure that you have your first instructional coaching meeting scheduled. The goal of the introductory email was to provide the opportunity for the teacher to learn about you; during this online, face-to-face meeting, you will work to further establish trust and credibility with the teacher.

**Rationale:** Establishing trust is crucial to long-term, productive instructional coaching. During this conversation, you will set up the opportunity to hear about the teachers' needs and to provide targeted feedback. The feedback you provide will be more readily taken-up by the teacher based on the relationship work you are beginning in this conversation.

### Conversation Protocol

1. Welcoming (**5 minutes**)
  - a. Introduce yourself, telling the teacher your name, where you teach, and what you teach.
  - b. Offer a general structure for the conversation:
    - i. Teacher and coach introductions
    - ii. Having the teacher share about her experience with PBL and KIA
    - iii. Talking about next steps in getting started with the instructional coaching process
2. Learning about the teacher (**10 minutes**)
  - a. Sample text: "As a coach, I see myself as a collaborator to help you look at how you are teaching the KIA curriculum and use the lens of the PBL Teaching Framework to help you identify areas for growth. My role is not to tell you what to do but to help guide you through the process of gathering data, identifying opportunities for growth, and co-developing specific strategies to try."
  - b. Give the teacher the opportunity to talk about herself and her teaching.
    - i. Questions to prompt conversation:
      1. "How long have you been teaching? At your current school?"
      2. "What is something important for me to know about your classroom or your school to best understand your students?"
  - c. Learn about the teachers' prior coaching experiences:
    - i. Questions to prompt conversation:
      1. "Have you worked with a coach before? Describe that experience. What worked well? Were there things that didn't work for you?"

2. “What should we know about each other to best work together (e.g., communication style, best way and best time to reach me, internal vs. external processor, etc.)”
3. Learning about experience with KIA to date (**5 minutes**)
  - a. Ask the teacher to describe her experience with the KIA curriculum so far.
    - i. Questions to prompt conversation:
      1. “How has the KIA curriculum been the same/different from previous years?”
      2. “What have you enjoyed most about teaching the KIA curriculum?”
      3. “What has been the most challenging part about teaching KIA so far this year?”
4. Overview of Cycle of Inquiry (**5 minutes**)
  - a. “Based on your experience with KIA up to this point, I’d like to talk about how our meetings will be structured, which we refer to as the Cycle of Inquiry. Using the focal areas of growth that we will identify next, you and I will discuss what you want to focus on as I watch a video of your teaching. Following this meeting you will video record an entire lesson, and then prepare and upload the video to the online portal for me to view. Once uploaded, I will view your video and then prepare feedback for a post-video virtual meeting, which is the fourth and final step in a complete cycle of inquiry. In this virtual meeting, you and I will jointly develop next steps for you to try out in your classroom.”
  - b. Refer teacher to the Teacher Overview of Instructional Coaching document on the NIC website.
5. Self-Evaluation on the project-based teaching (**30 minutes**)
  - a. “An important part of this meeting is starting the process of figuring out what to concentrate on in our work together. Let’s turn to the Project Based Teaching Rubric. We will be using this to identify areas of strength and growth in our work together. This is a non-evaluative rubric; it will help us focus in on things to work on. Using areas of growth that you identify, we will then work together over the next five cycles to identify opportunities for improvement. Our goal now, is to identify two practices that we will focus in on. Throughout the cycles of inquiry, we will use evidence from your teaching to measure your growth.”
  - b. Talk through the **Project-Based Learning Teaching Rubric** teaching practices and indicators and identify two areas of growth. Give time for teacher to self-evaluate based on the rubric. Ask clarifying questions for more detail on specifics of teaching.
  - c. Explain that the remaining meetings will get more concrete and detailed around the teachers’ practice in relation to the areas of growth he or she identified.
  - d. Record the teacher’s self-evaluations so that you both can refer back to them during the course of the coaching cycles. Each pre-observation form for each

cycle has a space in the form for you to note the teacher's self-evaluation for reference, making it easy to track this information.

- e. Be certain that you and the teacher are completely clear on which two of the PBL Teaching Rubric teaching practices that will be the focus of your instructional coaching cycles of inquiry.

6. Next Steps (**5 minutes**)

- a. If possible, schedule your first pre-observation meeting with the teacher at the end of this conversation.
  - i. Remind the teacher that coaching meetings are 30-60 minutes long.
  - ii. Confirm that the teacher has downloaded and can use Zoom.
  - iii. Send teacher link to the NIC website
    - 1. <https://sites.google.com/site/virtualinstructionalcoaching/>
    - 2. Point out two pages:
      - a. Teacher & Coach Materials
        - i. <https://sites.google.com/site/virtualinstructionalcoaching/teachers>
        - ii. "This is where we will access the coaching forms for our meetings."
      - b. Teacher Materials
        - i. <https://sites.google.com/site/virtualinstructionalcoaching/teachers-1>
        - ii. "This is where you can access a document that describes the coaching process and video uploading helper files."
- b. Ask the teacher if she has any questions before ending the conversation.