

# International Baccalaureate Educator Network Success Case Study Final Report



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## Executive Summary

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The International Baccalaureate Educator Network (IBEN) trains educators to support the development and implementation of International Baccalaureate programmes<sup>1</sup> by serving in a variety of professional development or evaluation roles. International Baccalaureate's vastness and diversity render IBEN an essential support for a near-infinite variety of implementation contexts. Inflexion partnered with International Baccalaureate to gather multiple forms of evidence used to examine the benefits of IBEN participation that accrue to educators and their schools. The project involves five phases, including a literature and document review with key informant interviews, a survey of IBEN educators ("IBEs"), case study site visits, analysis and reporting, and presentation or publication. This report constitutes Phase 4 and synthesizes the learnings from the first three phases. Phase 5 will include presentations at an IB conference and publications. After briefly describing the purpose and methods, the report is organized by the five research questions below. Findings from this report will inform International Baccalaureate's decisions about possible improvements to the IB Educator Network. Ultimately, Inflexion designed this evaluation to produce the following:

- An evidence-supported impact model illustrating how IBEN participation affects IBEs and their schools
- Promising practices and recommendations regarding how schools can benefit from IBEN participation

The research questions are as follows:

1. What are IBEN's theory of change and underlying assumptions and how well does prior research support this theory and its assumptions?
2. What is IBEN's impact model regarding its effects on participating educators and schools?
3. What factors influence outcomes for IBEN educators and schools?
  - a. What facilitating factors and enabling conditions enhance positive outcomes?
  - b. What challenges and disablers inhibit positive outcomes?
4. What promising practices arising from IBEN participation can educators and schools enact to facilitate successful outcomes?
5. What changes and supports can IB initiate to maximize positive IBEN outcomes for educators and schools?

### Methods

The mixed method study design is based on Brinkerhoff's (2002) Success Case Method, which follows five integral steps: Focus and plan the study; create an impact model to define success; design and implement a survey to elicit best cases; interview and document cases; and communicate findings, conclusions, and recommendations. Inflexion researchers developed the draft impact model based on a review of IBEN internal documents, a literature review, and interviews with key informants. The preliminary impact model, which explicated IBEN's theory of change, was refined via a worldwide survey of IBEN educators. Figure 1 displays the final impact model.

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<sup>1</sup> In this report, Inflexion uses standard American English. However, when referencing specific IB programs, the spelling *programme* is used (e.g., Diploma Programme) and when referencing the International Baccalaureate foundation, the spelling *organisation* is used (i.e., International Baccalaureate Organisation).

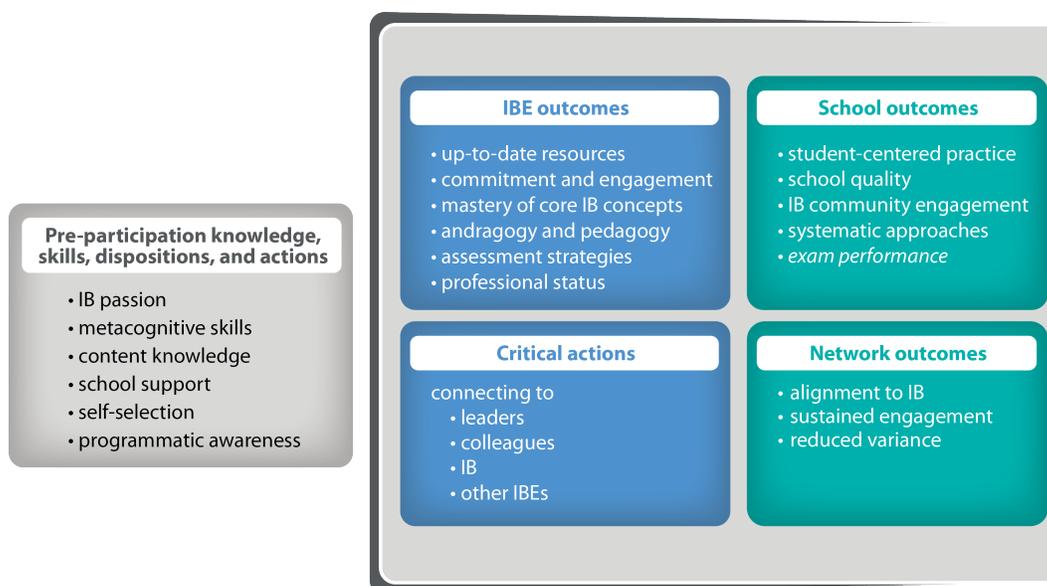


Figure 1. IBEN theory of change/impact model.

Survey results were used to craft a list of schools in which educators reported achieving quick or slower success in the outcome indicators in order to glean what factors may facilitate and hinder that success. This list was vetted with IBEN and other IB staff and publicly available achievement data, and a final list of schools was invited to serve as case studies. The seven sites selected included one in Europe, four in the Americas (two North America, one Central, one South), and two in Asia. Three reported success cases had happened slowly; four cases achieved quick success on the outcome indicators. The schools varied in size, governance (state funded versus private), number of IB subjects offered, and length of involvement with the IB. Interviews were conducted with members of the IBEN, other IB teachers, coordinators, and heads of school.

## Findings

Teachers involved in the IB Educator Network, or those we refer to as IBEs, accrued several benefits from participation. IBEs view their connection to the IBO as a major benefit of their IBEN participation, one that contributes to outcomes for them personally and for their schools. IBEs consistently report benefiting from the IBEN global community, using a slew of digital means to ask questions that generate immediate answers from a global community of helpful colleagues. IBEs also strongly believed their IBEN participation honed their craft as professionals. Although uncomfortable formally attributing changes in students' exam scores (or reduction in variability among exam scores) to their IBEN participation, IBEs knew they were better teachers of IB curriculum, had deeper pedagogical skills, and a firmer grasp of content knowledge because of their IBEN participation. Despite the amount of time they have to invest in IBEN participation, which often happens when their teaching duties are also heavy, they take their participation in the IBEN seriously because it heightens their knowledge, benefits their students, and builds their confidence as highly skilled educators.

The benefits to schools of having IBEN members as faculty include developing or strengthening systematic and systemic approaches to sharing and collaboration. The sharing itself in which IBEs

engage with their colleagues strengthens relationships and the willingness to collaborate and receive feedback in order to improve. Having IBEs on staff also benefits the school because, when the right school structures are in place (see next paragraph), they encourage other faculty to apply to be members of the network. And, regardless of the number of faculty who apply to be members of the network, schools benefit when IBEs share their knowledge and new skills with their colleagues and those colleagues adapt their teaching practices to incorporate the IBEN learnings. When there is a critical mass of IBEs in a school, there seems to be a deeper engagement with the IB school community regionally and even internationally. Faculty perceive a deep sense of connection with other IB schools. Some members of the schools that successfully incorporate IBEN learnings believe their students' exam scores would not be as high were the school to not have IBEN members as faculty. Finally, schools may benefit from the prestige of having faculty who are IBEN members by having an easier time recruiting students and families and attracting high-quality faculty members.

Findings illustrate that schools benefit from faculty members' IBEN participation when key structures and processes are in place. A critical mass of IBEs serving in a variety of roles appears to help schools realize different types of benefits. This is especially true when those roles include positions of leadership (e.g., department chair, IB coordinator), and the roles are spread across many departments. Synergistic effects radiate among IBEs who share the different types of knowledge they gain from playing different IBEN roles. When their schools also possess powerful collaborative cultures and the structures that support those cultures, these learnings are easily able to be shared with NonIBE teachers, thus magnifying the effects of IBEN participation. These collaborative cultures are supported by leadership that values IBEN participation and cross-departmental communication in tangible ways (e.g., creating school schedules that allow common planning time and ensuring faculty have time for intra- and interdepartmental meeting and collaboration). The most successful schools are those in which the culture facilitates IBEs having opportunities to consistently demonstrate the value of IBEN participation to leadership, particularly when it is a leadership team and not one individual.

The benefits of IBEN participation may be affected by the centrality of IB to the core mission of the school. In this study, secondary schools in which successful implementation of IBEN learnings happened at a slower pace were large, with several instructional program options for students. Thus, there were teachers affiliated with IB and others not affiliated, creating more of a challenge for IBEN learnings to have schoolwide effects. Notably, however, even in these large schools with several instructional programs, the benefits of IBEN were magnified when IBEN members were dispersed among the departments.

With the positive findings regarding the effects that IBEN participation could have on the IBEs themselves as well as on their colleagues and students, it was interesting to learn how little most of the IB teachers at our study schools knew about the network. It may not be surprising that IB teachers not affiliated with IBEN would know little about the network, but even those who served as examiners often did not realize they were IBEN members.

### Promising Practices for Schools

A major goal of this study was to identify key practices used by schools to maximize the benefits of IBEN participation so that these can be shared with all IB World Schools. Typically, school leaders' creation or enactment of policy shapes organizational learning. We discuss how school leaders'

policies can harness learning from their educators' IBEN participation. The school-level promising practices that emerged from the research are summarized below.

- Saturate their schools with a critical mass of IBEN participants.
- Distribute these participants across subjects, groups, departments, and grades.
- Develop a matrix of IBEN members by the type(s) of expertise they have.
- Intentionally hire and track based on IBEN expertise.
- Establish and support professional learning communities (PLCs).
- Dedicate time specifically to collaboration and peer learning, particularly in PLCs.
- Discuss with IBEN members local needs, devise policy, and follow it to fully support IBEN participation and the dissemination of learnings from those engagements.
- Create and share procedures and guidelines for sharing IBEN learnings.
- Intentionally and repeatedly make teachers aware of the IBEN resources in their midst.
- Share resources and strategies digitally.
- Employ standardization exercises led by the IBEN members to ensure all IB teachers are able to apply new learnings.
- Collaboratively review quality assurance feedback IBEN members receive.

### Recommendations for the IB

A second major goal of the study was to develop recommendations for the IB, and the IBEN staff in particular, to help schools and IBEs maximize the benefits of IBEN participation. One recommendation to the IB is to focus on strengthening the IBEN "brand." One of the clearest takeaways from 40 hours of interviews is that few people outside, and only some inside, IBEN know about the network. The "IB Educator Network" name resonates with few IB faculty, though its roles do. Even members of IBEN perceived difficulties delineating IBEN information from general International Baccalaureate information. There was also a confusion among both IBEN members and other IB faculty about what constituted the "network." Examiners, in particular, feel isolated, and are not certain whether they are members of IBEN. Even workshop leaders saw the main activity of being in the network as individualistic: they drive or fly to some location, deliver a workshop, and return home, usually with some new contacts they made among their audience.

The IB could focus some resources on strengthening the networking components, including communication and collaborative structures. Members of the network recommended creating meetings with job-alike colleagues, increasing the possibility to lead workshops across regions, increasing personal communications from subject leaders, and developing an explicitly IBEN career progression or "ladder." IB could then pitch its redefined brand at workshops and enlist "champions" or high-achieving members of the network to raise awareness of IBEN. IB could communicate the findings from this research to the IBEN community, providing tips and guidance for IBEN members to maximize schoolwide benefits from participation.

Several other recommendations for promising practices or actions IB can take include

- using an assertive, targeted approach to recruitment particularly among newer educators who demonstrate great promise.
- providing more guidance on transdisciplinarity and opportunities to conduct Category 3 workshops.

- simplifying/clarifying communication procedures (i.e., summarizing content with links to more information via weekly email digests; simplifying the assignment and confirmation procedures; providing prospective accounting of anticipated IBEN role needs).
- demonstrating an understanding of the predictable patterns of school-year activity and when IBEN members will be particularly constrained by other responsibilities.
- leveraging parallel local, national, regional, and worldwide networks in which IBEN members participate.

## Introduction

Founded 50 years ago in Switzerland, International Baccalaureate (IB) now annually prepares more than a million students ages 3 to 19 to become lifelong, globally aware learners. For about two decades, the IB Educator Network (IBEN) has helped International Baccalaureate achieve exponential growth; it now offers programmes in more than 5,000 schools that span more than 150 countries.

International Baccalaureate's vastness and diversity render IBEN an essential support for a near-infinite variety of implementation contexts. To maintain IBEN, International Baccalaureate has identified and trained thousands of IB educators (IBEs), most of whom are classroom teachers, coordinators, or administrators based in its authorized schools. IBEs, some of whom are retirees who remain current with International Baccalaureate practices, perform an array of tasks such as evaluating student exams and/or schools and leading professional development workshops.

Despite IBEN's integral nature and long history, the network had not been formally evaluated before International Baccalaureate contracted Inflexion, a research center in Eugene, Oregon, USA, to do so. Formerly known as the Educational Policy Improvement Center (EPIC), Inflexion leans on a 16-year history of supporting initiatives to improve students' college and career readiness.

Called the *IBEN Success Case Study* because of its application and modification of an emerging evaluation method (see Brinkerhoff, 2002), this study was an opportunity to address aspects of the Rossi, Lipsey, and Freeman (2004) evaluative ladder (see Figure 2). Specifically, the study addresses IBEN's design, theory, outcomes, and impact. This report reflects work that Inflexion conducted between December 2016 and July 2018, updating an interim report submitted to International Baccalaureate in June 2017.

### Mission

International Baccalaureate aims to develop inquiring, knowledgeable, and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end, the organization works with schools, governments, and international organizations to develop challenging programmes of international education and rigorous assessment.

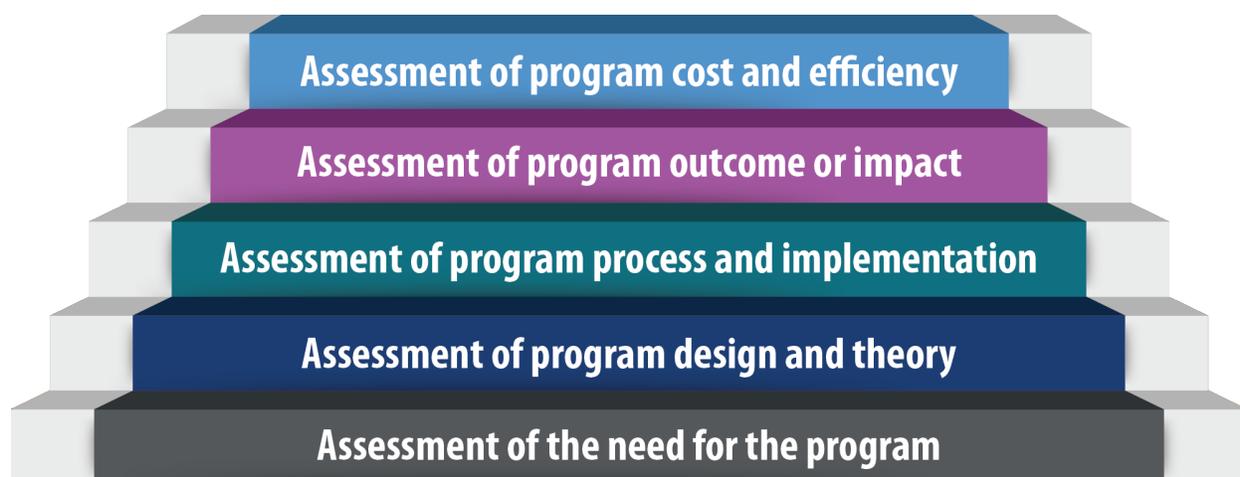
These programmes encourage students across the world to become active, compassionate, and lifelong learners who understand that other people, with their differences, can also be right.

### Four Programmes

Primary Years Programme (PYP): pre-kindergarten through U.S. Grade 5 equivalent

Middle Years Programme (MYP): U.S. Grades 6–10 equivalent

Diploma Programme (DP) & Career-Related Programme (CP): Final two years of secondary school



*Figure 2. Ladder of evaluation.*

## International Baccalaureate Educator Network (IBEN)

Within the organization, International Baccalaureate staff refers to IBEN both as the network and the individuals comprised within it. To aid clarity, we distinguish IBEN (i.e., the network) from IBEs (i.e., educators who perform IBEN-assigned duties).

Educators with substantial experience at International Baccalaureate schools may apply to join IBEN. Eligibility to join IBEN requires an educator to have (a) at least three years' experience in a candidate or authorized International Baccalaureate school, (b) extensive programme knowledge and familiarity with relevant programme documents, (c) participated in one or more online or face-to-face International Baccalaureate workshops, (d) a desire to share knowledge with other International Baccalaureate practitioners and/or schools, (e) demonstrated written and oral fluency in one of the International Baccalaureate's three official languages (i.e., English, French, or Spanish), (f) availability to commit to two IBEN assignments per calendar year, and (g) the intention to remain an active International Baccalaureate practitioner for at least two years following IBEN training. Applicants who work in schools must also receive approval from administrators to attend IBEN assignments as requested.

After successfully completing IBEN training, which typically blends online modules and face-to-face sessions, IBEs may serve in various roles. The current study's primary interests are IBEs who lead/facilitate professional development workshops to train future and current educators in International Baccalaureate's four programmes or as examiners of end-of-course assessments or other work products from students in the Middle Years Programme (MYP), Diploma Programme (DP), or Career-Related Programme (CP). (International Baccalaureate does not formally assess Primary Years Programme [PYP] students.) IBEs might also serve IBEN by visiting interested, candidate, and/or authorized schools to evaluate and/or verify a school's adherence to the International Baccalaureate Programme Standards & Practices; reviewing curriculum; or developing course content.

## Goals and Research Questions

The *IBEN Success Case Study* is a program evaluation designed to garner multiple forms of evidence about the benefits conferred to individuals who participate in IBEN and the International Baccalaureate schools where they work. Findings from this report will inform International Baccalaureate's decisions about possible improvements and recommendations to schools. Ultimately, Inflexion designed this evaluation to produce the following:

- An impact model (informed through literature and document reviews and key informant interviews) including the inputs and activities found in traditional logic models.
- Profiles accounting for contextual factors salient in many International Baccalaureate schools.
- Promising practices that IBEs and their schools have developed to learn or otherwise benefit from IBEN participation.
- Recommendations for how International Baccalaureate can optimally help its schools achieve success through IBEN participation.

International Baccalaureate and Inflexion codeveloped five research questions to govern this study:

1. What are IBEN's theory of change and underlying assumptions and how well does prior research support this theory and its assumptions?
2. What is IBEN's impact model regarding its effects on participating educators and schools?
3. What factors influence outcomes for IBEN educators and schools?
  - a. What facilitating factors and enabling conditions enhance positive outcomes?
  - b. What challenges and disablers inhibit positive outcomes?
4. What promising practices arising from IBEN participation can educators and schools enact to facilitate successful outcomes?
5. What changes and supports can IB initiate to maximize positive IBEN outcomes for educators and schools?

## Method

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We begin this section by describing the Success Case Method (Brinkerhoff, 2002) and explanatory sequential mixed method design (Creswell & Plano Clark, 2011), the research approaches guiding this study. We adapted each to suit this evaluation’s complexity (see Poth, 2018). Next, we briefly explain the procedures Inflexion used to address each of the previously stated research questions. Full descriptions of those procedures can be found in Appendix A.

### Design

Like other evaluation methods (e.g., success stories, Kibel, 1999; illuminative case study, Stake, 1995; positive deviance case study, Spreitzer & Sonenshein, 2003; appreciative inquiry in evaluation, Preskill & Catsambas, 2006), Brinkerhoff’s (2002) Success Case Method enables evaluators to discover what is working well in a program and the factors that facilitate or inhibit success. All these methods are rigorous in the qualitative tradition, focusing on credibility, analyzability, transparency, and utility (Roller & Lavrakas, 2015). Although many qualitative methods are time- and labor-intensive—hence, cost-prohibitive—the Success Case Method balances qualitative rigor with efficient data collection and analysis. Typically, Success Case Method studies follow the five steps listed below.

1. Focus and plan the study.
2. Create an impact model to define success.
3. Design and implement a survey to elicit best and worst cases.
4. Interview and document cases.
5. Communicate findings, conclusions, and recommendations.

Applying the Success Case Method to IBEN required adaptation of the explanatory sequential mixed method design (Creswell & Plano Clark, 2011), which researchers often use to identify phenomena quantitatively and then use qualitative methods to deepen understanding. One of our adaptations featured the addition of an initial qualitative exploratory phase to inform the development of a relevant quantitative survey, an approach Success Case Method studies often employ to identify appropriate cases for intensive inquiry (see Figure 3).

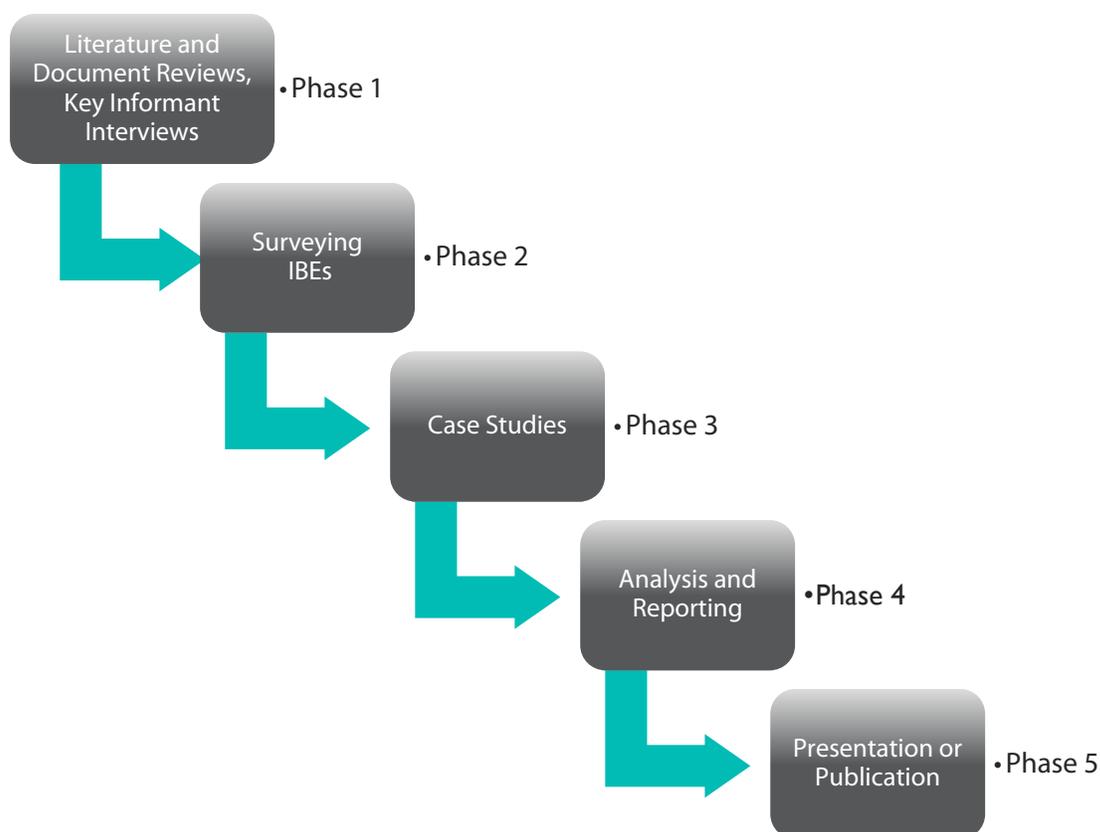


Figure 3. Five phases of the *IBEN Success Case Study*.

## Procedures

To address the five previously stated research questions, we adhered to an explanatory sequential mixed-method design (Creswell & Plano Clark, 2011) to develop the Success Case Method approach. For this study, we augmented the typical explanatory sequential design by adding an initial qualitative exploratory phase to frame the development of a quantitative survey.

In the initial qualitative exploratory phase, we reviewed IBEN internal documents, conducted a multi-tiered systematized review of relevant literature (see Grant & Booth, 2009), and interviewed five key informants within the International Baccalaureate Organisation. (See Appendix B for the key informant interview protocol and Appendix C for the qualitative coding dictionary used for analysis.) The key output of that phase was a preliminary impact model that defines success for IBEs, their schools, and IBEN. During latter phases, we tested and refined the impact model.

Second, we sent surveys to 2,232 IBEs working in 1,117 schools in 109 countries to identify potential success cases (i.e., schools that demonstrate programmatic impact). One thousand fourteen (1,014) IBEs working in at least 682 schools in 93 countries completed or partially completed the survey. Two respondents did not identify the schools at which they work. This corresponds to an IBE-level response rate of 45.4%; a school-level response rate of 61.1%; and a country-level response rate of 85.3%. Survey respondents represented IB Africa, Europe, and Middle East (IBAEM) (32.5% of respondents); IB

Americas (IBA) (34.4%); and IB Asia-Pacific (IBAP) (32.8%). The survey featured pairs of items per success indicator: one item for respondents to rate their contributions toward their school’s implementation, attainment, and/or demonstration of a given success indicator, and a corresponding item about the time frame during which the school implemented, attained, or demonstrated the given success indicator. We used these pairs to differentiate fast success schools (i.e. those that demonstrated programmatic impact quickly) from slow success schools (i.e., those that took more time and had to overcome barriers to achieve success). See Appendix D for the full version of the survey and Appendix E for informed consent procedures.

Third, we selected seven IB World Schools as case study sites, sampling for maximum variation (Patton, 2002) based on schools’ speed to success, strand (i.e., governance structure), region, nation, size (i.e., number of students), language of instruction, maturity (i.e., years since authorization), programmes offered, and programme size (i.e., number of DP subjects offered). Descriptions of the seven sites are presented below with Table 1 offering an overview of the sites’ demographics.

Table 1. Summary of Demographic Descriptions of IBEN Case-Study Sites

Variable	Descriptive Data
Speed-to-success	4 fast and 3 slow
Strand	4 government-funded schools (1 U.S. public); 2 international schools (1 legacy); 1 single-sex private, non-international school
Region	4 IB Americas; 2 IB Asia-Pacific; 1 IB Africa, Europe, Middle East
Language of instruction	6 English and 2 Spanish
Authorization/Years since	Range: 1975–2012; $M = 22.56$ years since authorization; $SD = 14.28$ years since authorization
Programme size	3 large (30+ DP courses offered); 2 mid-sized (15–29 DP courses offered); 2 small (<15 DP courses offered)
Programmes offered	7 DPs; 2 MYPs; 1 is interested in offering the MYP; 1 is interested in offering the PYP

**Fast A** is a private, single-sex school in South America offering instruction in both Spanish and English. It serves students from pre-primary through secondary school and has been authorized for the Diploma Programme for fewer than 10 years. Fast A has a limited DP course offering (i.e., fewer than 15 subjects), and all 16–19-year-old students enroll in the Diploma Programme, working toward a full or partial IB Diploma.

**Fast B** is a large private school in Southeast Asia serving more than 2,000 students from primary through secondary school. It offers more than 30 subjects through the Diploma Programme and is well-established as an IB school (i.e., authorized for more than 25 years). All 16–19-year-old students in the school enroll in the Diploma Programme, working toward a full or partial IB Diploma.

**Fast C** is a large private school in Southeast Asia serving more than 2,000 students, including day and boarding students. It has been authorized for the Diploma Programme for fewer than 10 years. Fast C offers more than 30 subjects and all 16–19-year-old students enroll in the Diploma Programme, working toward a full or partial IB Diploma.

**Fast D** is a non-U.S. state-funded school in Central America serving more than 1,000 but fewer than 2,000 students. It has been authorized for the Diploma Programme for at least 10 but fewer than 20 years and has a limited DP course offering (i.e., fewer than 15 subjects). Not all 16–19-year-old students in the school enroll in the full DP or take some IB courses; there are alternate curricular options available.

**Slow X** is a non-U.S., state-funded school in North America serving more than 1,000 but fewer than 2,000 students. It offers at least 15 but fewer than 30 subjects through the Diploma Programme and is well-established as an IB school (i.e., authorized for more than 25 years). Not all 16–19-year-old students in the school enroll in the Diploma Programme; there are alternate curricular options available.

**Slow Y** is a large public U.S. high school serving more than 2,000 students. It offers at least 15 but fewer than 30 subjects through the Diploma Programme, has the Middle Years Programme, and is well-established as an IB school (i.e., authorized for more than 25 years). Not all 16–19-year-old students in the school enroll in the Diploma Programme; there are alternate curricular options available.

**Slow Z** is a small state-funded school in Europe serving fewer than 1,000 students. It offers more than 30 subjects through the Diploma Programme, has the Middle Years Programme, and is well-established as an IB school (i.e., authorized for more than 25 years). All 16–19-year-old students enroll in the Diploma Programme, working toward a full or partial IB Diploma.

Case studies included group and individual interviews with IBEs, heads of school, coordinators, and teachers who were not affiliated with IBEN. Table 2 displays the numbers of interviews at each site by role. IBE interviewees were asked about their experiences with the IB Educator Network and bringing IBEN learning back to their schools. Heads of schools, coordinators, and NonIBE teachers were asked about their experiences with IBE educators bringing learning from their network assignments back to their schools. Full interview protocols can be found in Appendix F. We conducted constant-comparative analysis (Goetz & LeCompte, 1981), applying magnitude coding (Saldaña, 2015) to the interview data.

Table 2. *Number of Interviews by Site and Role*

School	Heads of School	Coordinators	IBE Teachers	NonIBE Teachers	Total
Fast A	1	1	7	5	14
Fast B	1	1	15	8	25
Fast C	1	1	20	5	27
Fast D	2	1	6	10	19
Slow X	1	1	5	7	14
Slow Y	0	3	2	4	9
Slow Z	1	3	4	6	14
<i>All</i>	7	11	59	45	122

In this report, which represents Phase 4 of the study plan, we present findings that illustrate the promising practices and recommendations. We also have distilled the findings across the seven case study sites to illustrate commonalities by key contextual factors that influence how the IBEN impact model looks when viewed in real-world educational settings. Those contextual factors include

- programme type and maturity
- number and distribution of IBEs
- leadership
- school resources, governance, and community
- school's nation and/or region

After the publication of this report, we will conclude Phase 5 of the study with presentations and manuscripts submitted for publication.

### Reading This Report

In the ensuing section, we present findings by research question in narrative form. Reading from top to bottom, narratives have been sorted by frequency with which a given impact model component or category showed up in the interview data, approximating salience of that component to interviewees. Where applicable, the narrative offers discrepant cases where interviewees' comments contradicted impact model assumptions. To protect interviewees' anonymity, we identify speakers of included quotations only by site (e.g., Fast A, Slow X) and role (i.e., head of school, coordinator, IBE, and NonIBE). In certain cases where a quotation would identify the school or individual, we have redacted the label for the school (i.e., "a fast school" versus Fast A).

## Findings by Research Question

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This section presents the study's findings. The phases have corresponding research questions, which are listed as major headers in the section.

RQ1: What are IBEN's theory of change and underlying assumptions and how well does prior research support this theory and its assumptions?

*Highlight 1.1: The IBEN impact model reveals a wide range of intended outcomes for IB educators, schools, and for IB.*

*Highlight 1.2: Research literature supports the IBEN model and processes. For example, participants best positioned to benefit from professional development networks are those whose values, beliefs, and prior knowledge align with programmatic goals.*

*Highlight 1.3: Successful networks of educators provide a variety of activities and resources, employ strong communication strategies, and monitor their own progress, but depend on sufficient time and resources.*

The first research question focuses on bringing to the surface the underlying rationale for why participation in IBEN would have effects on the network's participating members and on the schools in which they work. In other words, the research question seeks to describe IBEN's theory of change and the prior research that supports the theory of change. The impact model is another way of referring to the theory of change and is the more commonly used terminology in the Success Case Method; there is no meaningful difference between the two terms. In the impact model we developed to describe IBEN, International Baccalaureate intends the network to positively affect IBEs and the schools where they work. We illustrate this theory in Figure 4. We then highlight the prior research that supports the model's proposed benefits of IBEN participation to the educators themselves and to the schools in which they work.

Succinctly, the theory of change posits that motivated educators, supported by their school leaders, self-select into the network based on individual, school-level, and network-level screening factors. IBEN provides training and experiential inputs as members expand their knowledge, skills, and dispositions while completing general and role-specific critical actions that generate individual outcomes (see blue boxes). The schools where they work and the network as a whole also accrue benefits in both overlapping and distinct ways (see teal boxes).

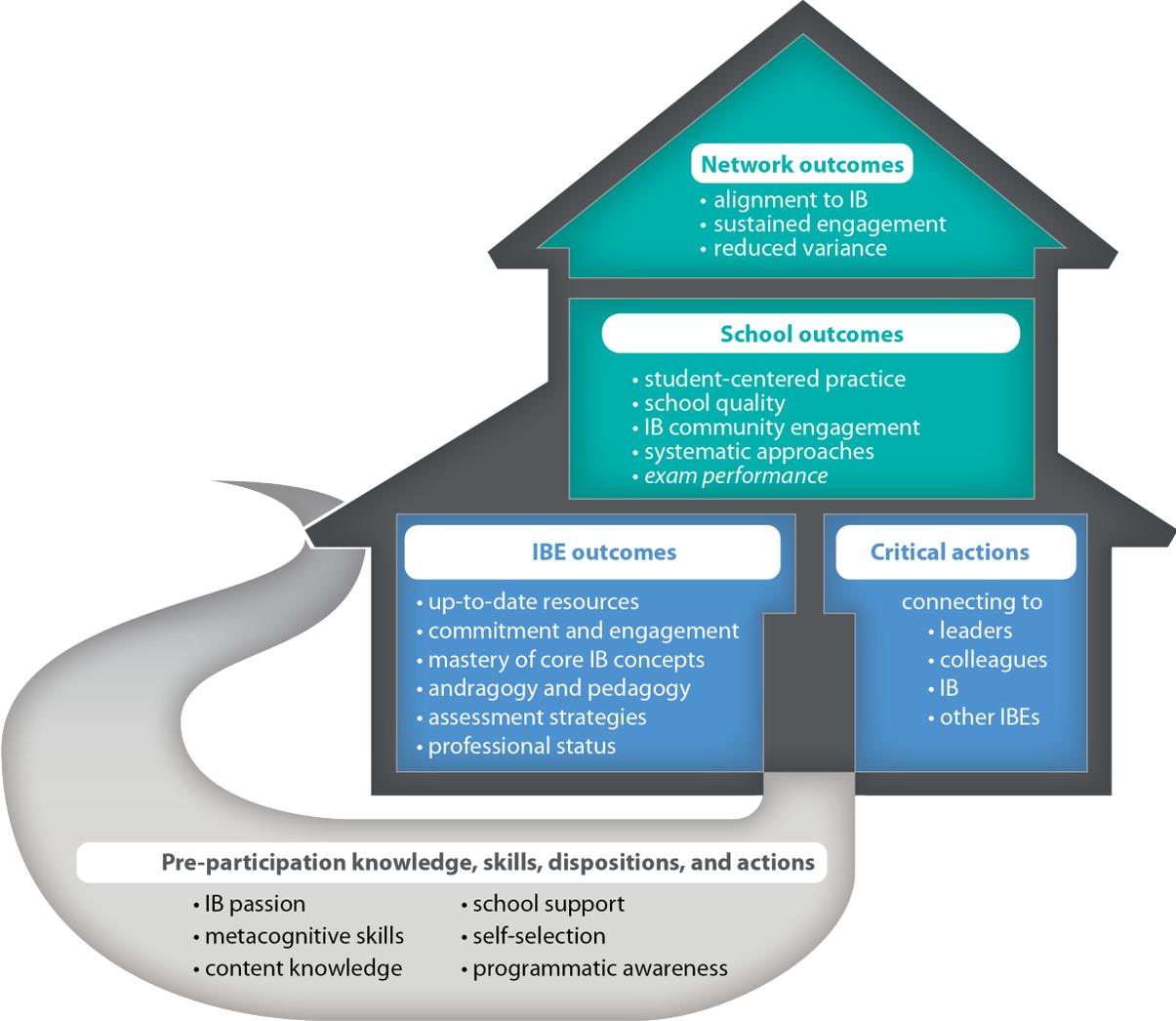


Figure 4. IBEN theory of change/impact model.

In Figure 4, the impact model begins with a winding grey road meant to illustrate the varied nature of IBEs’ backgrounds and paths prior to joining the network. Along their paths, future IBEs acquire or demonstrate 16 pre-participation knowledge, skills, dispositions, or actions in six categories (identified in Table 3). Next, IBEN vets applicants from among those who self-select into consideration for entry into the network. Upon being welcomed into the network—indicated as a multi-level house—IBEs complete critical actions. These actions affect and are affected by the outcomes to the IBEs themselves. The IBEs’ actions and outcomes lead to school and network outcomes.

Table 3. *Components of IBEN's Theory of Change/Impact Model*

Pre-participation knowledge, skills, dispositions, and actions: 16 components in 6 categories	
IB passion (3)	passion for International Baccalaureate (IB) philosophy and pedagogy, nascent levels of respect for multiple perspectives, valuing peer learning
Metacognitive skills (7)	nascent levels of critical thinking skills (e.g., reflection, creativity, transfer), problem solving, engaging instructional delivery, positive demeanor, empathy
Content knowledge (2)	course-related content knowledge, information and communication technology (ICT) fluency
School support (1)	seeking support from school leaders
Self-selection (1)	self-selecting into IBEN pool
Programmatic awareness (2)	understanding programmes' distinguishing features, awareness of school's mission overall as it pertains to IB
Critical actions of IBEs: 11 actions in 4 categories	
Connecting to leaders (3)	sharing with leadership teams upon return, serving as a member of leadership team, demonstrating value of IBEN participation to school leaders
Connecting to school colleagues (3)	presenting findings, supporting colleagues' implementation, participating in ongoing professional learning communities
Connecting to IB (4)	serving as a link from school to IB, reflecting on findings from Quality Assurance framework, maintaining/exceeding commitment minimums (i.e., 2 events/year for workshop leaders; minimum work products for examiners)
Connecting to other IBEs (1)	networking with other IBEs
IBE outcomes: 21 outcomes in 6 categories	
Instruction tips for assessment (2)	concrete student tips to improve instruction per exam round, ICT fluency
Enhanced professional status (3)	expanding ways to self-define or confirm oneself as high-quality (i.e., through skills or confidence), professional development, badge of merit
Up-to-date resources (1)	employing up-to-date guides and resources
Mastery of core IB concepts (6)	communicating the IB mission; deeper understanding of international-mindedness, Learner Profile, and IB Programme Standards & Practices; respect for multiple perspectives; peer learning
Improved pedagogy and andragogy (2)	increased breadth of programme-appropriate pedagogical approaches to foster active student engagement (e.g., inquiry-based instruction); refining abilities to educate adults
Commitment and engagement (7)	increased/improved engagement, reflection, transfer, creativity, problem solving, and empathy; sustained engagement with positive demeanor

**School: 8 outcomes in 5 categories**

Student-centered practice (1)	widening staff engagement in IBEN-learned practices
Exam performance (2)	improving course-level exam scores; increasing aggregate exam scores
School quality (2)	advertising/marketing IBEN participation as badge of school quality (i.e., for prestige or recruitment)
IB community engagement (2)	increasing number of IBEN faculty via faculty interest or promotion by leadership, deepening engagement with the wider community of IB schools
Systematic approaches (1)	developing or applying school-based processes or systems for educators to collaborate and/or share IBEN-learned practices

**Network: 4 outcomes in 3 categories**

Alignment to IB (1)	schools aligning culturally and pedagogically to IB as evidenced by the Learner Profile, student-centered learning, international-mindedness, and other core features of IB programmes
Sustained engagement (1)	sustained engagement with IBEN for continuous learning
Reduced variance (2)	all workshops staffed with quality-assured trainers, decreasing variance in students' scores between teachers of a given subject within a school*

\* IBEN internal staff had hypothesized this being a salient school outcome. The case study data suggested it was at most a minor consideration, and in some cases an undesirable outcome whereby it would increase the tendency to rate teachers against one another.

Ultimately, IBEs can derive 21 individual benefits in 6 categories including improved pedagogy, deeper mastery of IB concepts, and professional status. Schools can accrue 8 outcomes organized into 5 categories, including enhanced systematic approaches and student-centered practice. Finally, the attic level shows that the network itself can achieve 4 outcomes such as schools' stronger alignment to IB's pedagogical aims.

### Literature Review Core Learnings

Regarding the second component of Research Question 1 (i.e., how well prior research supports the IBEN theory of change and its assumptions?), we found strong research support in some areas, but due to the unique nature of International Baccalaureate and the rarity of a network of IBEN's scope and scale, this theory is ahead of the research base in some ways. We provide an abstracted version of our literature review findings here with a full version included as Appendix G.

Overall, extant literature confirms several facets that are the foundation of the theory of change. For example, effective professional development networks operate with a shared leadership approach and are deeply collaborative. They provide a variety of activities and resources, employ strong communication strategies, and monitor their own progress, but depend on sufficient time and resources. Effective networks set specific, applicable, and meaningful goals shared by members and aligned with members' school cultures. Participants best positioned to benefit from professional

development networks are those whose values, beliefs, and prior knowledge align with programmatic goals, suggesting a need to factor educators' existing knowledge and experience into professional development programs.

Professional development opportunities can provide participants with content and pedagogical knowledge, skills in andragogy, and new resources. Opportunities that engage educators in collaboration, vision and norm setting, capacity building, and shared leadership can enhance professional capital and improve pedagogical practices related to increasing student engagement and/or achievement.

Schools can draw on educators' enhanced skills to establish collaboration systems, disseminate learning among other educators, and engage in changes to school culture and engagement, with the potential effect of improving student achievement. The ability to achieve professional development goals is facilitated by sustained coordinated efforts, continued support through trainings, applied practice, opportunities for collaboration, and technical assistance, as applicable. Although contextual factors have the potential to inhibit effects of professional development, schools can target more malleable factors such as leadership, school structures, and collegial relationships to effect change.

Evident in our responses to the subsequent four research questions, these salient features of effective professional development networks aptly describe IBEN. In many cases, survey respondents and case-study participants vocalized exactly these key points, many of which are explored further in subsequent sections of this report. Furthermore, findings from key informant interviews and the literature review cohered in nearly all areas.

RQ2: What is IBEN's impact model regarding its effects on participating educators and schools?

*Highlight 2.1: IBEN educators enjoy a confidence in their professional skills they attribute to their IBEN participation.*

*Highlight 2.2: IBEN educators have a deeper understanding of IB concepts (e.g., international mindedness) and processes (e.g., assessment marking) than they had prior to becoming involved in IBEN.*

*Highlight 2.3: IBEN educators want to share their IBEN learnings, particularly on topics that have direct and immediate positive effects for students.*

*Highlight 2.4: Schools benefit as IBEN educators forge new or adapt existing systems and structures to ensure IBEN learnings are shared and students benefit. NonIBE colleagues confirm they also benefit from having IBENs in the school.*

*Highlight 2.5: A critical mass of IBEN educators who are spread out among the departments results in schools with wide application of IBEN learnings.*

Research question 2 focuses on confirming the effects of IBEN participation on educators and the schools in which they work. IBEN staff interviews revealed staff knowledge and understanding of IBEN's purposes and how it achieves its goals. Interviewees described IBEN as recruiting and training qualified educators to fill roles and provide services that International Baccalaureate would not otherwise be able to offer and discussed secondary goals of satisfying stakeholders and the development of educators. They shared the inputs and processes intended to achieve these goals, and

the contexts that support, inhibit, or otherwise affect outcomes. For IBEs, these outcomes included increased professional capital and pedagogical skills, the latter of which interviewees expected to improve student engagement and achievement within the educators' classrooms. Due to IBEs' enhanced pedagogical skills and knowledge of International Baccalaureate processes, interviewees suggested schools often recruit and then advertise that they have IBEs, seeking enhanced prestige. Interviewees also cast IBEs as being uniquely situated to support alignment between schools' and International Baccalaureate's philosophies.

Through our review of the literature and discussions with IBEN key staff, we drafted the impact model that then needed to be tested against actual school data to ensure the model truly captured the benefits of IBEN participation. By coding interview data from our seven case-study sites, we tested the degree to which the impact model depicted in Figure 4 describes the realities IBEs experience in their schools. In Table 1, we display our case study sites' contextual range to enable readers of this report to examine the ecological validity of its findings (i.e., the extent to which the research findings approximate relevant actors' real-world experiences).

Across the seven case study sites, we found *very strong* evidence that the impact model is representative of the experiences of educators and schools that successfully learn from IBEN participation (i.e., ecologically valid). This finding supports the idea that the desired outcomes IB has for IBEs and their schools seem to be happening and lends credence to the claim that if schools engage with IBEN in the ways suggested in this report, they can expect to enjoy the range of outcome benefits depicted in the impact model.

Based on explicit coding of 44 components<sup>2</sup> from the impact model (i.e., 11 critical actions of IBEs; 21 IBE outcomes; 8 school outcomes; and 4 network outcomes), our interview data featured all 44, illustrating how well the impact model helps explain what outcomes are being experienced by IBEs and the schools in which they work.

We compared representation of those 44 components per case-study site. Representation of impact model component relevance per site ranged from 65.9% (i.e., at least one interviewee mentioning at least 29 of the 44 components) to 95.5% (at least one interviewee speaking to 42-of-44 components). With the exception of the school labeled Slow Z, interviewees at all other sites spoke to at least 37-of-44 components (84.1%). The observed high and mostly narrow range implies that the impact model explained IBEN-related learning *very well at nearly all sites*, an important finding given the sites' contextual variety. We hypothesized several explanations for Slow Z respondents mentioning somewhat fewer impact model components:

- Slow Z's IBE to NonIBE ratio was considerably lower than for the other schools in our sample. Correspondingly, Slow Z's IBEs were examiners only, excepting two site visitors—neither of whom indicated many efforts to share their off-site learning with peers. We surmise workshop leaders are typically better positioned to share IBEN learning than examiners, whose experience is more solo and compartmentalized.

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<sup>2</sup> Our interview protocols did not aim to interrogate the 16 pre-participation knowledge, skills, dispositions, and actions. Research questions focused instead on processes and outcomes of IBEN participation; therefore, this report accounts only for the 44 components (i.e., codes) after IBEs join the network.

- Educators and administrators at Slow Z do not consider IB programming to be the school's driving force, but rather a complement to existing philosophy and practice. We heard echoes of this theme in other schools (Fast B, Fast C), but at muted levels compared to Slow Z.
- Slow Z staff was available only for an abbreviated site visit of approximately 60% of the time spent at the other sites. Consequently, we acquired less raw interview data at Slow Z than at other sites.

There were 50 instances in which a case-study site featured no interviewee's comments for a given component. Among those 50, 31 (62.0%) were from the IBE outcomes portion of the impact model, which included the most narrowly defined components. Totaling data per case-study site, all school benefits were conferred at 6 of 7 sites, furthering the cross-validation of the impact model. Next, we further examine interviewees' beliefs about the outcomes IBEs have experienced personally due to IBEN participation.

### IBE Outcomes

This section describes the knowledge, skills, dispositions (KSDs) and other outcomes that IBEN educators claimed to gain from their IBEN participation. These outcomes are aligned with what was found in the literature and our interviews with key informants. The outcomes fell into six broad categories, which were commonly articulated by interviewees across the sites visited. The outcome categories will be described in detail here. For a full listing of IBE outcomes, please see Appendix H.

The following subsections cover these commonly referenced outcomes: instruction tips for assessment, professional status, up-to-date resources, mastery of core IB concepts, improving pedagogy and andragogy, and commitment and engagement.

**Instruction tips for assessment.** Among the most positive IBEN participation outcomes valued by interviewees were opportunities to "demystify" the assessment process (Fast B, Coord). Across sites and roles, interviewees were remarkably consistent and effusive about the benefits of participation to understanding the assessment process. Interviewees praised IBEs' opportunities to clarify understanding of the "nuts and bolts" of criteria that can seem vague or "subjective" to many teachers prior to IBEN participation (Fast A, IBE; Fast C, IBE). We found consensus that IBEs become more confident about effectively preparing students for exams. Many interviewed teachers characterize exam preparation as a "crapshoot as to actually understanding exactly what the IB wants" (Fast B, IBE), with IBEN participation taking the guesswork out of that process.

Examiners especially highlighted an increased ability to assess with precision and lead students to filter out "noise" from their exam responses (Slow Y, IBE) after they learn patterns of where students worldwide tend to struggle (Fast C, IBE; Slow X, IBE). They also described general test-taking strategies they taught their students, like outlining an argument and ensuring clear handwriting, after realizing the importance of such approaches while marking exams. One examiner even instructs his students to skip lines because he believes that makes the exam easier to read, thereby allowing the examiners of those papers to focus solely on content (Slow Z, IBE). IBEs can diagnose systemic blind spots in their classrooms and schools, mostly because they can access exemplars that other teachers cannot (Fast B, IBE).

**Professional status.** IBEN seems to reaffirm, reassure, and stimulate participants, some who feel “more qualified” for their own jobs as a result (Slow X, IBE). Additional skills seem to instill additional confidence. A teacher at Fast B joked, “I don’t know how to do some other stuff in life, but I can do this pretty well.” IBEN imparts subject-specific knowledge and skills, and also deepens understanding of broader areas of education such as organizational theory due to comparing contexts of the students whose papers they read, teachers whose workshops they lead, or the schools they visit. An examiner at Slow Z explained his role “gives you a better idea of how other schools are doing it.” Another added, “I think it also shows—and that was very insightful as well—the importance of the national, well, the context. Every school has a different context and that becomes so obvious that you become more aware of it.”

Some IBEs feel that simply being selected for the network validates their fitness as International Baccalaureate teachers. Seemingly the greatest gain for one IBE (Slow Y) included an application of the Socratic paradox: “The degree of discomfort in [the] IB world is pretty high among teachers. But as you go through this, you realize truly no one knows anything.”

Meanwhile, interviewees used various terms to describe how the metaphorical IBEN merit badge makes educators respected, well-known, prized, subject specialists, higher authorities, highly regarded, high-quality, reliable, credible, trusted, go-to people, experts, and/or master teachers who “do know what we’re doing” (Slow Z, HOS). The data revealed four ways in which the “badge” of IBEN membership advantages IBEs, including in (a) their classrooms, (c) communications with parents and guardians, (b) school hierarchies, and (c) job markets.

Giving teachers the classroom equivalent of “street cred,” the badge leads students to think of IBEs as “official. . . . When you share with the students that you’re an examiner, they, whether rightly or wrongly, assume that means you have a better understanding of something” (Fast C, IBE). Another IBE (Slow X) uses the status “not as bragging per se, but just to lend more . . . credence to what I’m saying.” At Fast A, IBEs are appreciated because they are perceived to “go that extra step.”

IBEs motivate other teachers to “want to be like that” (Fast A, HOS). According to an IBE at Fast C, joining IBEN placed him “on a par” with highly experienced staff. IBEs also reported using the badge on job applications, confident that hiring committees add weight to CVs that bear the experience. One IBE (Fast A) leveraged IBEN status into a side job with Pamoja Education, the world’s only online provider of International Baccalaureate content for students. Another IBE (Fast C) regarded IBEN participation as “a major factor” in attaining his current teaching job.

However, we found some discrepant views on the extent to which the badge provides tangible, reputational benefits. Several interviewees said it was not worth adding to one’s CV or email signature. To one IBE (Fast B), his IBEN affiliation was “just another thing.” Another IBE struck middle ground, commenting,

It doesn’t *not* help you. But it’s not necessarily a selling point. It shows that you’re interested. You’re determined. You’re dedicated. You’re trying to expand your sphere of influence. You’re looking at progressing your career. You’re knowledgeable about your subject area. (Fast C)

According to an IBE (Fast C) who is also a school administrator, the reputational benefits depend on job title. For classroom personnel, IBEN membership indicates someone who can help students and teach at a high level, a value that does not seem to carry over for administrators.

Regarding professional development, interviewees called IBEN training “the best PD I’ve ever done” (Fast B), a source of “rapid professional growth” (Fast C), and a reason to “feel like I’m a professional” (Slow Y). One coordinator in a well-resourced school with a robust professional development budget contrasted IBEN training from school-based training or typical International Baccalaureate workshops with the former being “*special* training.” For one IBE (Fast C), the professional development is “the main motivation for continuing with it because it does come with frustrations, and I don’t think we do it for the cash.” A NonIBE agreed that she was interested in becoming an examiner, “not so much for the money, but as professional development.”

**Up-to-date resources.** Acquiring updated resources—new course guides especially—was a further positive benefit identified by interviewees, who perceived that access to IB’s materials can spare IBEs from wasting time on cumbersome internet searches. Educators in Spanish-instruction schools reported a particular benefit due to the paucity of Spanish-language materials. Moreover, the quick-paced turnover of curricular content with review cycles every 5–7 years led interviewees to appreciate “heightened awareness [of] what’s on the horizon” (Fast C, IBE). IBEs often learn about changes at “inception” (Slow Y, IBE), enabling them to have time to consider the change and how their (and their colleagues’) teaching practice needs to pivot to accommodate IB changes as they go into effect. One examiner (Slow Z) described how he was able to immediately prepare his students for an exam-marking change, but that he observed students of non-examiner teachers took a year to catch up. He theorized that examiners paid more attention to such changes when announced due to their IBEN roles, while non-examiner teachers only caught on to the change after seeing their students’ exam results. This heightened awareness of the need to share examiner learnings across the school.

IBEs can also “trickle down information” to their colleagues whether they are in the network or not (Slow X, NonIBE). Of course, this advanced “access to huge stacks of exemplar material” leaves some IBEs to feel “guilt” because, as one IBE at Fast B commented,

it’s the opposite of democratized. . . . There is definitely a sense that I have privy to more information than some of my colleagues. Am I given an unfair advantage as a teacher, because I’m part of this system? And I don’t really understand why that stuff shouldn’t be more freely available to the rank and file teachers . . . if the ultimate goal is to raise standards, improve education, improve the understanding of the course, help teachers to deliver the course better.

Yet, one coordinator (Slow Y) felt challenged to keep up with changes from International Baccalaureate despite additional access to resources.

**Mastery of core IB concepts.** This subsection includes the following related areas: increased levels of respect for multiple perspectives; communicating the International Baccalaureate mission; and deepening understanding of international mindedness, the Learner Profile, and the International Baccalaureate Programme Standards and Practices. First, IBEs describe that, due to their IBEN participation, they increased understanding of and commitment to the IB ways of teaching and learning, including the IB core value of multiple perspectives and ways of knowing, which applies to

not only what and how students learn but also how teachers engage in their practice. One coordinator (Fast C) described his early approach to IB as “very British and [my school] was all I knew. It was a great IB school, but I didn’t really know anything beyond that.” After IBEN work introduced him to multiple contexts, “I was going: “Really? Is that what people do? Well, yeah, because there’s differen[ces].” Another coordinator (Fast B) explained how leading workshops helped him realize “hundreds of different ways to do this.”

Ability to communicate the IB mission seemed to be another area of growth. IBEs self-described as ambassadors, promoters, and advocates after acquiring “a larger view of what the IB programme looks like” (Slow X, HOS). Transmitting that understanding to students and parents seemed especially beneficial once IBEs learned “it’s not really just about getting the maximum score for their different IB assessments. There is so much more to it than that. It’s teaching them about the kind of people and learners that they can be” (Slow Y). Reportedly, IBEN enhanced participants’ understanding of international mindedness in most cases. IBEs described their increased understanding of the behaviors of global citizens, implications of cultural diversity, and the importance of recognizing a local-to-global continuum that connects the world. “That’s what we want to teach our students,” one IBE (Fast D) said. “They have to be more humane, more aware, pro-environment, take care of their elderly, of the orphans.”

Knowledge of the IB Programme Standards and Practices provided further evidence of an IBEN effect. According to one coordinator (Fast A),

I didn’t really know about the standards and practices. . . . I went to a workshop. Of course, it was presented and everything, but I think my understanding of . . . what was required was definitely deepened and broadened by IBEN participation.”

Another coordinator (Slow Z) benefitted from the IBEN participation of her staff: “Now having people within IBEN, it’s really helpful. I’ve already started to look at standards and practices with . . . staff [who are] in IBEN, and I think that is really the step forward to prepare me for the evaluation.” Other interviewees described moving from knowing only small portions of MYP or DP into big picture or umbrella understandings.

**Improving pedagogy and andragogy.** Many IBEs reported their involvement in IBEN had improved their pedagogy and, if they were workshop leaders, their andragogy skills. Interviewees reported development in their degree of engaging pedagogy. A head of school (Fast C) said the key benefit is that network tasks “translate to everyday classroom practice.” Engaging pedagogy required IBEs to place students at the center of their practice. One IBE (Fast D) illustrated his approach, learned through IBEN experiences, to engaging pedagogy and reflective practice: “We guide them during the class. We promote activities as challenges and as subjects to reflection. Reflection must be constant—always related to knowledge theory and the world around them.”

Improving their andragogy skills was a valued benefit of IBEN participation for workshop leaders. Many workshop leader IBEs reported feeling energized by increasing their andragogical skills. One stated the following,

Being in that room full of adults who have paid money to their schools, have paid money to learn from me, that is a confidence booster. It also forces me to bring my

absolute best. And it certainly helped in other realms, just in terms of doing things after school for teachers and helping them. (Fast B)

Prior to having IBEs, another school trained teachers in the same way students were taught. Now they have learned “to seek what adults have in mind and what they are seeking. It’s a different approach. You’ve been working with kids forever and suddenly you realize: it’s not the same thing. But you think it’s to be approached the same way” (Fast A, IBE). Preparing to teach adults compelled at least one IBE “to make sure I thoroughly understood everything myself before I could teach other adults” (Slow Y). Importantly, IBEs reported a hesitancy to position themselves as experts. Instead, they would pitch the work as a puzzle that they would struggle with alongside their participants, be they teachers from other schools in IB-sponsored workshops they were leading, or their own colleagues in formal or informal training sessions at their schools.

**Commitment and engagement.** Interviewees also reported increased or improved engagement, positive demeanors, and reflective practices. IBEN experiences seem to invigorate many IBEs, an enthusiasm they tend to bring back to their classrooms. The injection of positivity prompts some to continue in current roles, pursue deeper involvement with the network, or continue “developing as a professional” (Slow Z, HOS). However, not all roles produce such euphoria. As one IBE commented,

When you come back from leading a workshop, you’re definitely on a high because you learn there, as well. You meet participants and hear about what they’re doing at their schools. That gives you definitely a buzz and you definitely feel tired, but on a high from the workshop leading. I’m not sure I would say the same about moderating 200 [Internal Assessments]. (Fast B)

According to several IBEs, participation in roles with “constant evaluation” (Fast D, IBE) yields more reflective practices, enhancing one’s ability to teach students “how to learn to learn” (Slow X, NonIBE). One coordinator (Fast A) said that teachers in general could benefit from becoming a more reflective group of professionals: “It’s hard to do, because I think it has to do with personal practices, and something with maybe cultural, as well. The way the teachers were taught was not necessarily that way.” Another coordinator (Fast B) did not question the need for reflective practice, but questioned whether IBEN participation influenced it.

In summary, there were a number of benefits IBEs experience personally and that ripple out to their students and colleagues. Some of these become schoolwide outcomes, to which we turn next.

## School Outcomes

Review of existing literature plus interviews with IBEN staff at the IB suggested there would be school-level outcomes associated with having IBEs working at schools. The data from the site visits confirmed a number of outcomes at the school level derive or are enhanced due to having IBEs on staff. Thinking about IBEN participation benefits for IBEs’ schools, interviewees focused mostly on systematic approaches to collaborative practices, increasing the numbers of faculty involved in IBEN, and widening staff engagement in IBEN-learned practices. Commentary for each school outcome appeared in the data at nearly every site and from interviewees of nearly every role. Only NonIBEs did not comment on the less-frequently occurring school outcomes, perhaps due to their reduced familiarity with the network (see RQ5). For a full listing of school outcomes, see Appendix I.

The following subsections cover these outcomes: systematic approaches, student-centered practice, perception of school quality, exam performance, and IB community engagement.

**Systematic approaches**<sup>3</sup>. Interviewees from a number of the case schools explained that IBEN was a source of, and reason for, newly developed systematic approaches and structures. Other interviewees indicated IBEN-learning practices were shared through existing systems. When describing the school-based processes or systems that educators developed or employed to share IBEN-learned practices with their local colleagues, nearly every case study site employed at least some sort of electronic file-sharing system. Schools varied, however, from some developing IBEN-specific policy approaches to others creating conditions for organic transfers of learning from IBEN or other sources. As we detail in the promising practices section (see RQ4), schools innovated solutions to ensure dedicated collaborative time, most seeking a locally relevant balance between needs for mandated policies that provide explicit procedural guidance and implicit approaches with some latitude for personalization by context. Nearly every interviewee at every site described their school's search for the right amount of systematicity as an iterative process or journey. For example, Fast A has an open-door policy that allows teachers to visit their colleagues' classrooms at any time. The policy began as a full-school mandate, then became a departmental initiative, and is now working well as a recommendation. According to the coordinator,

It's not just because I go. Any teacher could go at any moment. Some teachers do not feel comfortable going . . . and some teachers feel that they have so many things to do, that why would they waste their time observing? . . . It's a good practice, but it's not something that we would ask for and that would be measured, like how many times you go. . . . But it's good practice, anyway, so it's encouraged.

Interviewees at some schools insisted IBEN was a source of, and reason for, newly developed systematic approaches. In one school (Slow X), a silo effect and a schedule of merely one collaboration day per semester left educators "on our own little islands," slowing the school's ability to fully benefit from IBEs' participation in IBEN, although other factors (e.g., long history with the DP, highly experienced IB teachers) mitigated that barrier to allow the school to successfully integrate IBEN learnings.

**Student-centered practice.** Many interviewees linked their schools' systematic approaches to widening staff engagement with IBEN-learned practices, specifically those around student-centered pedagogy that enabled educators to activate the cores of the programmes. Having IBEs in the building enabled Slow Y to "be an IB school and understand what that means, what is asked of us, what's expected of the students sort of universally throughout the school," one NonIBE said. A coordinator (Fast A) said that such permeation of programme-specific practice required deep intentionality to foster sharing not just among IBEs, "but among all the other teachers." In particular, a NonIBE (Slow X) identified the Approaches to Learning, which were highlighted and continuously referenced by IBEs, as the "missing piece" that finally enabled his school to emphasize self-directed, motivated learning, differentiating it from what the local, traditional model failed to emphasize. An IBE (Slow Y) claimed IBEN learning helped the school find a "common language" to keep "philosophy on

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<sup>3</sup> Despite this component of the impact model drawing more interviewee comments than any other, this section might seem shorter than anticipated. Many of the relevant quotations pertain more to RQ4 about promising practices of how IBEs and their schools share learning from the network.

the surface” and facilitate horizontal and vertical integration. A head of school (Fast B) watched IBEs move his school toward “a more holistic approach.” We only found one series of discrepant views in this area, from a group interview with NonIBEs at Fast D. This group saw no impact on practice as IBEs “might tell us their experiences, how some educators work in other institutions, and perhaps we can take them as examples to apply here, but we usually work with our own means.”

**Perception of school quality.** To indicate prestige and aid recruitment of students and/or faculty, some schools quantified the depth of their IBEN participation as a successful outcome. A head of school (Fast C) has used his IBE proportion as evidence for his teachers’ “international reputation” in parent conversations and advertising campaigns. Similarly, that school’s coordinator is “not shy in telling people” the IBE statistics for their public relations value, because “parents love it!” IBEs at that school said the high proportion indicates school commitment to International Baccalaureate and generates trust in its teachers.

Other school heads pitch IBEN participation as a “good extra” (Fast D, head of school). Some IBEs wish their schools would do more to sell IBEN participation (e.g., Fast B; Slow X). One coordinator (Slow Y) dryly described the school’s IBEN marketing as “none, nil, zero, zip, zilch.” In some contexts, however, direct marketing would fail as a violation of cultural norms about modesty. One head of school (Fast A) promotes IBEN participation “in a very—how do you say—elegant way. We are not the type of school [to purchase a] huge newspaper ad saying, ‘Come and study with us.’ In our [country], that is not well received.” Instead, her school relies on alumni’s word of mouth and implicit messaging through Instagram photos of IBEs’ experiences.

**Exam performance.** Many interviewees were hesitant to ascribe school-level increases in exam scores to IBEN participation. However, one head of school (Fast D) believed that IBEN learning helped the school to become the first public International Baccalaureate school in his country to reach 100% in earned diplomas. Similarly, IBEs at Fast B give some credit to IBEN learning for a 10-year consistent rise in per-student score averages and having no moderation factor up or down for internal assessments in several subjects over the last few years. A coordinator (Slow Z) also asserted that IBEN participation “has a positive impact on student assessment,” but said this came from a “strong feeling” and that it would be “difficult to measure.” One IBE (Fast A) said, “Although we have always had 100% approval since we started, I believe grades have been going up because of things that, not only me as an examiner, but the other teachers becom[ing] more aware of what is needed in order to be successful.”

**IB community engagement.** Through an increased number of IBEs and meaningful interactions with other IB schools, interviewees at each site and of every role described how the critical actions of IBEs had deepened their schools’ engagement with the broader IB community. One NonIBE at Fast D explained that her IBE colleagues’ networking resulted in a site visit from an educator at a foreign school who taught her “a lot of techniques, new things, new ways to see the mathematics” and with whom she has stayed in contact. Instead of recruiting outside help, the IBE head of school at Slow Z works with other IBEs at her school to “target teachers that we feel are really senior expert teachers” to encourage them to join IBEN in order to fill “gaps” or address areas where her school has “not been that successful.” In this virtuous circle, IBEs perform critical actions that result in school outcomes, including an increased number of IBEs on staff. These new IBEs are then able to perform critical actions to produce greater outcomes or address gaps in expertise or skill.

### RQ3: What factors influence outcomes for IBEN educators and schools?

*Highlight 3.1: Peer sharing and collaboration are widespread and embedded within the culture and structures of schools that successfully integrate IBEN learnings schoolwide.*

*Highlight 3.2: IBEs in schools that benefit from IBEN involvement use multiple methods to share their learnings with colleagues, including informal sharing, new teacher mentoring, and formal PLCs.*

*Highlight 3.3: IBEs and their schools benefit in direct and tangible ways from the IBEs' regional, national, and international communications with educators they meet through IBEN involvement.*

*Highlight 3.4: Schoolwide benefits from having IBEs are enhanced where IBEs are valued for their skills and placed in leadership roles.*

*Highlight 3.5: IBEs view their connection to the IBO as a major benefit of their IBEN participation, one that contributes to outcomes for them personally and for their schools.*

*Highlight 3.6: There may be a level of IBEN participation that maximizes benefits to IBEs and their schools; above this level, the IBEs and/or their schools may lose the benefits and IBEN participation becomes a barrier rather than facilitator to positive outcomes.*

Research question 3 seeks to illuminate the action of the IBEs plus the environmental/situation conditions and factors that influence whether and to what degree schools benefit from having IBEs on staff. First, this section will discuss the critical actions of the IBEs. Subquestions 3a and 3b will describe the environmental and situational conditions and factors that influence successful uptake of IBEN learnings at the school level.

Regarding the 11 critical actions of IBEs, networking with other IBEs, supporting colleagues' implementation, and presenting findings at their schools were most salient in the data. There was some degree of variation in this domain, a portion of which we attribute to several interviewees questioning the degree to which IBEN actually functions like a network (we discuss this idea in depth in the response to RQ5). Many IBEs feel rather isolated, although clearly many others feel connected to the network, so this idea remains contested.

Nearly all coordinators and IBEs spoke to each critical action; heads of school and NonIBE commentary was more variable. Six critical actions were mentioned at all sites, but the majority of sites featured commentary on all 11.

The following subsections cover these most ubiquitous critical actions: networking with other IBEs, connecting to school colleagues, connecting to leaders, connecting to IB, and maintaining/exceeding commitment minimums. For a full listing of critical actions of IBEN members, please see Appendix J.

**Networking with other IBEs.** IBEs deepen their own learnings by networking with other IBEs. After leading workshops, one IBE's first step is to find on LinkedIn "all those people that I met and that I liked and that I loved their ideas" (Fast A). IBEs consistently report using a slew of digital means to ask any question, no matter how arcane, generating immediate answers from a global community of helpful colleagues. An IBE (Slow Z) shared,

A forum in which people are sharing resources [is] through Basecamp. . . . I have direct access to the most knowledgeable people around the world right now, and that's the

easiest way and it's a forum. People can just ask questions and we're sharing resources, etcetera, etcetera. . . . I can get an answer within six minutes and it's coming from all over the world. It's much quicker than the help desk.

Another IBE (Fast B) has built a strong enough rapport with another workshop leader that they request to collaboratively lead large workshops. A coordinator (Fast C) appreciated the informal opportunities that arise during or as a result of IBEN activities, because "it's amazing what you can discuss over a pint of beer."

Some interviewees raised specific situations where networking has been particularly invaluable. IBEN connections are essential to support subjects of limited enrollments or that are offered rarely in a region, or when educators seek, for example, mother-tongue specialists. According to one IBE (Slow Y), if you are going to start an anthropology course in his country, "you're going to send me an email, which is kind of neat." IBEN connections helped another IBE (Fast C) find a school 11,000 km away from home to observe specific educational approaches.

Although most interviewees praised the interpersonal opportunities, one coordinator (Slow Y) described limited possibilities when leading workshops other than simply "sitting next to people and having breakfast." One teacher (Fast B) found no collaborative engagement being "on your own laptop," which may be unique to his role as an examiner. We discuss this issue further in the recommendations section (see RQ5). One IBE (Fast B) recognized opportunities to network but does not feel equipped to "grab hold of everybody's card and figure out where things are. Sometimes, I get disoriented about making some of these connections."

**Connecting to school colleagues.** The bridge between personal IBE outcomes and the school outcomes hinges most directly on peer sharing and learning. Regarding peer learning, a coordinator (Slow Y) described the challenges of a three-year project of enhancing collaboration among teachers; she cited IBEN helping develop the requisite skills: "You can't do anything IB is asking you to do if you can't even have a collaborative conversation with the people you teach with." Correspondingly, a head of school (Fast D) described himself as already an open, collaborative educator but "IBEN helped me strengthen it."

IBEs connected to their school colleagues by presenting findings, supporting implementation of others directly, and through ongoing professional learning communities (PLCs). At fast schools, coordinators seemed comfortable relying on faculty benefiting from IBEs' experiences simply by asking "Who's got something to share?" (Fast B) or collegial generosity (e.g., Fast A) in addition to creating agenda slots for share-outs at faculty meetings (Fast C). At Slow Y, a coordinator lamented a dearth of systematic approaches because it rendered IBEN learning "underutilized." Seemingly a major contrast between fast and slow schools, the coordinator at Fast B said his school did not need "a policy that says, 'Thou shalt do this on return'" and yet the learnings were quickly shared.

Direct collegial connection "cascading" from experienced IBEs, especially to newer faculty, was "a massive part" of the IBEN advantage, according to one coordinator (Fast C). Most slow schools reported similar interactions in which NonIBEs would spend "hours and hours planning" with IBE colleagues (Slow X). When IBEs did not pair with new IB teachers, it was noticed: An educator who had been at Fast B for 1.5 years still felt "a little bit like a bunny in the headlights" because no IBE had worked with her. At Fast C, an IBE described the IBE-to-NonIBE mentorship connection as person-to-

person only if new teachers seek advice, not necessarily schoolwide, which understandably could allow for some faculty to lack adequate mentorship. No interviewee mentioned that new faculty might benefit from being paired intentionally with an IBE mentor, but such an approach might prove valuable given the gaps and benefits highlighted in some interviews.

PLCs, especially those in which IBEs had leading roles, offered most schools structured opportunities to share IBEN learning efficiently (e.g., Fast C; Fast D; Slow Y). At Fast A, an IBE described the weekly meetings as a place where IBEN “knowledge is spread” immediately. By contrast, Slow X’s head of school bemoaned that his school had not yet found a way to structure such meetings. One NonIBE at Fast B recognized that PLCs occur, “but never in a planned sense.” At Slow Z, department meetings offer opportunities to share (Coord; IBE), but a NonIBE explained that because no IBEs are in his department, he does not benefit from IBEN learning.

**Connecting to leaders.** IBEs connect to school leaders to show the value of IBEN participation when they join leadership teams or share insights with leaders upon return. A head of school at Fast A recommends to her peers that if school leaders are convinced of IBEN’s utility, “your school will receive all the benefits.” Similarly, a coordinator (Fast B) could not “understand why a school couldn’t see this as a beneficial thing,” but recognized the tension that occurs when one’s primary job is school-based, not in International Baccalaureate’s employ. At the same school, the head acknowledged that forbidding IBEs from accepting IBEN roles would be “hypocritical” because he knows the benefits as a workshop leader himself. Something that might slow down state-funded schools are challenges to better educate district and building-level leaders about what IBEN participation can mean for a school. In one national context (Fast D), IBEs needed ministry-level approval to leave the country, so demonstrating value was crucial.

Importantly, our data indicate that IBEs seem far more likely to share IBEN learning with school leaders when both are members of school leadership teams than when such sharing would only occur via one-off meetings. According to one coordinator (Slow Y), placing IBEs “in leadership roles within the school has a ripple effect.” Her peer at Fast A contended that turning IBEs into school-level decision makers “has made a difference.” However, one IBE (Slow Y) cautioned against assuming IBEN involvement necessarily translates to a desire for a leadership role.

**Connecting to IB.** Several IBEs feel like they are two-way conduits between the organization and their school. They can be a school’s “constant IB voice” (Slow Y), but the effect can be reciprocal as some schools may have influenced the organization. Most interviewees at Fast B described a time when its IBEs raised curricular objections that prompted significant changes. “I don’t know that we caused that change,” one IBE said, “but our voice, I know, was part of saying, ‘Hey, this practice is not really terribly useful or helpful.’” The coordinator is certain that his school’s workshop leaders affected the change. Regardless, the IBEs felt a sense of pride that they could leverage their professional expertise as constructive critics.

Another IBE linked this experience to participating in a pilot project that shows them curricular changes years in advance, streamlining their vertical articulation, although “how much influence we have,” said one IBE, “I’m not entirely sure.”

**Maintaining/exceeding commitment minimums.** At some schools, IBEs need not worry about maintaining the two workshop-per-year minimum: they can rely on heads of school who never say “no” to requests so long as a department head approves. Other workshop leaders depend on times when school is out of session so permission is not required (e.g., June–August in the Global North). IBEs who struggle to meet the workshop minimum cite various challenges. One IBE (Slow Y) described the type of people who would be drawn to IBEN as

committed educators, and committed educators put their [students] before everything else. So, I've turned things down. They had to cancel a workshop . . . last year because I wouldn't do it. . . . Unfortunately, this is the same reason why I'm not an examiner, because right now is our busiest time of year. I can't be grading someone else's papers.

Likewise, a NonIBE (Slow Z) suggested IBEN participation “may be okay if it's once a year, twice, but as soon as it becomes more than that, I think it actually negatively impacts our students who have to be our first priority.” A coordinator at the same school agreed, arguing that it “can affect the work you have in your school.”

Other IBEs cited sabbaticals or family issues as reasons why they might be less active in certain years. Among examiners, the flexibility of online assessment has made it easier for some to dodge the full commitment (typically 200 exam scripts). With paper copies, one had to complete an entire stack. Now online, IBEs can opt out at any point. An IBE (Slow X) who feels motivated by the examination process also noted the eye strain from computerized grading is a disincentive to complete 200 or more exam scripts.

RQ3a & 3b: What facilitating or enabling factors enhance and what challenges or disablers inhibit positive outcomes?

*Highlight 3.7: Clear differentiating factors between fast and slow success schools include governance (i.e., state-funded or private), teacher collaboration time, and spread of the IB programme (i.e., selective or schoolwide). State-funded schools with selective IB programmes and/or little teacher collaboration time may struggle to fully benefit from having IBEs on staff.*

*Highlight 3.8: IBEs are more successful at sharing their learnings schoolwide when they feel supported by school leaders who have and champion strong communication skills, shared leadership philosophies, and familiarity with IB.*

*Highlight 3.9: The saturation and distribution of IBEs affect a school's ability to realize the benefits of IBEN participation. A critical mass of IBEs is important and having IBEs dispersed among departments and programmes aids uptake of IBEN learnings.*

*Highlight 3.10: Physical location, educational policy, and culture can support or inhibit positive IBEN outcomes.*

During the development of the impact model, we identified ten contextual factors that appear to moderate, facilitate, or constrain the impact of IBEN on schools employing IBEs. Each appeared in the data from all seven sites<sup>4</sup> to varying degrees. At times they appeared to differ in significance or

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<sup>4</sup> For reference, descriptions of the schools were provided on pp. 6–7.

expression between the fast and slow schools; these are noted when relevant. Because the influential factors were distributed across schools and sometimes distinguished fast from slow success schools, we present groupings of important factors rather than presenting findings from each individual case. Individual case reports would have increased report length and redundancy and obscured the factors that appear to be influential.

The contextual factors that influence successful uptake of IBEN learnings at the school level include the following:

- Programme(s) offered
- Programme or school maturity
- Leadership team activities, functioning, attitude, and orientation
- Number of IBEs on staff
- Distribution of IBEs across subjects
- Public/state or private governance
- Resources
- School community and climate
- Region
- Nation

These factors are organized into four clusters of contextual variables as shown in Figure 5 to describe differences between the most and least malleable factors.

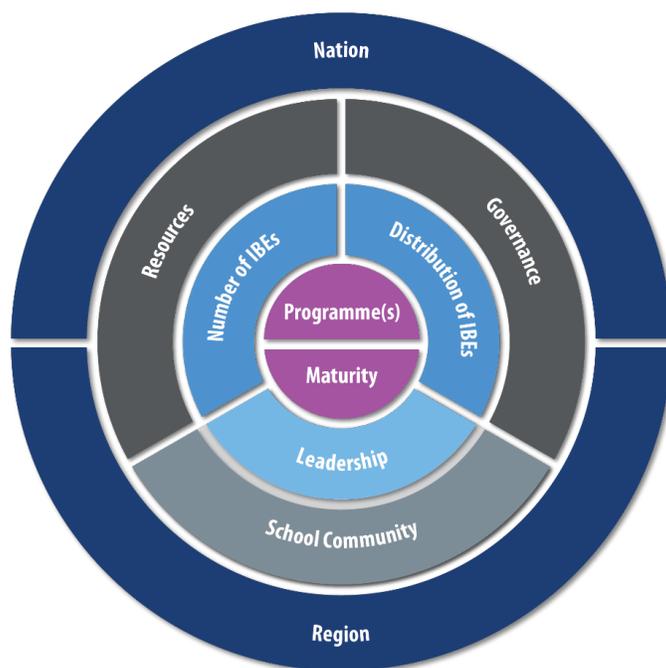


Figure 5. Contextual factors that enhance/inhibit IBEN learning in schools, with each color ring described in a context group.

### *Context Group 1: Programme and Maturity*

The IB programme(s) implemented and their level of maturity are perceived by school personnel as factors that influence their ability to access and disseminate IBEN learnings effectively. Interviewees at each of the seven sites described programme offerings and maturity as central to consistency within a school and between the school and IB. They described successive programmes as providing for (or even demanding) greater faculty collaboration. They also shared the knowledge and comfort they have developed as their programmes have matured—they are able to more easily incorporate new learnings because of the solid basis of information they already know about their programme(s).

**Programmes offered.** Schools offering successive programmes have a “shared understanding, shared perspectives, and a base” (Fast C, IBE) to support students’ transitions and teacher learning. At two schools that offer the MYP and DP programmes, structures have been created to bring teachers of both programmes together. One fast school, for instance, has a single leadership team overseeing all MYP and DP students, which allows for greater focus and collaboration (HOS). Personnel at one of the slow schools agree that there is a shared philosophy to teaching and learning among staff because multiple IB programmes are offered within the school.

Although all seven schools acknowledged the potential benefits of offering successive programmes, an IBE explained some of the challenges that still remain for one of the slow schools, despite offering both MYP and DP programmes. Because all Grade 9 and 10 students are in the MYP,

There’re hundreds, and hundreds, and hundreds of kids taking these classes. Yeah, the teams are enormous. . . . Trying to sell it and get people to try something new and do it consistently across the grade level so that all the kids are having a fair and reasonably consistent experience—it’s hard. (Slow Y)

The IB coordinator at this school explained there is “a lot of misunderstanding about what the middle years program is—what it’s designed to do, how it works, what its purpose is.” The sheer size of the school and the number of teachers, students, and parents makes it challenging to get all parties to the same level of understanding about the programme.

While that large state-funded high school struggles with consistent implementation, Slow X and Fast C are considering adding the MYP or pre-IB. “The desire to share pedagogy K to 12 is there from a lot of people.” Fast A, meanwhile, has been focusing on preparing students for the diploma programme by consistently implementing IB practices while students are in lower secondary grades. The coordinator would like to go even further: “The sharing is concentrated in the high school teachers, and I feel there could be a lot more going on in primary and we could share more there.” An IBE (Fast A) agreed, but added that the school

should send more teachers to IB training for the primary years programme even if we actually don’t carry it out immediately. They should have the experience and see what they’re doing and things like that. . . . If you have that in the primary years programme, that would actually help us a lot.

Offering successive programmes clearly provides consistency for students and allows for greater collaboration among faculty, which seems to help these schools to incorporate IBEN learnings. For

schools currently unable to implement additional programmes, Fast A may serve as an example for bridging the gap.

**Programme or school maturity.** Interviewees described their development over multiple years of being IB authorized and discussed the challenges of being newly authorized, which was summed up by a NonIBE at Fast B: “Maybe they don’t know because [the teachers associated with a newly implemented programme] are new.” The coordinator at Fast B elaborated,

Your priorities are wholly different. So, if you are recently authorized, you are on that sort of upward track of experience where your primary focus . . . is to make sure your teachers have reached a base level of IB understanding and buy-in and competence in training. . . . In your first three to five years, it’s establishing all of those protocols and beliefs and values, and the notion of core.

An IBE (Fast D) also cited five years as a turning point in a programme or school’s maturity.

Once a school has matured, schools can better interpret and implement changes in IB policy or guidelines and scale the learnings from the IBEs on staff (Fast C, NonIBE; Slow Z, IBE). The IB coordinator at Fast D explained, “After so many years, the change doesn’t scare us anymore. . . . We are more comfortable now.” Similarly, an IBE at Slow Z asserted maturity has “given the school the opportunity to find the confidence to push [IB] guidelines and to explore and to be creative within those guidelines.”

## Context Group 2: Leadership, Number of IBEs, and Distribution of IBEs

Leadership at successful sites tend to encourage and support teachers to become IBEs and meet their responsibilities as such. This, along with saturation and distribution of IBEs across subjects, facilitates the realization of IBEN-related benefits.

**Leadership team activities, functioning, attitude, and orientation.** Site visit interviewees used various terms to describe leadership at their schools, including “top-down,” “bottom-up,” shared leadership, and “distributive leadership” (Fast A, HOS; Slow X, NonIBE; Slow Y, IBE; and Slow Y, Coord). Leadership styles and familiarity with IB seem to have the greatest influence over the extent to which leaders encourage teachers to become IBEs and support extant IBEs.

*Encouraging and supporting IBEs.* At Fast D, the head of school directly encourages teachers to become IBEs, while that role falls to the overall IB coordinator plus the MYP and DP coordinators at Slow Z. The IB coordinator explained she would encourage coordinators at other schools to “join the IBEN network and then help other members of their team to join the IBEN experience, as well, because it is a really valuable experience.” The DP coordinator agreed, “It’s also a way to have teachers in your school [who] are more knowledgeable and more IB savvy.” These coordinators send out mass emails about IBEN openings and discuss opportunities with teachers in person.

The head of school at Fast A epitomizes the attitude toward IBEN participation seen at the fast schools. This was relayed by an IBE at Fast A, who said,

She says go ahead. . . . There’s no restrictions . . . [she’s] very open and supportive [of IBEN participation]. . . . There’s no policy saying we have to, it just happens. We don’t

get discounted from our salaries if we go—nothing. The school is very, very supportive.

As all of the schools visited were able to achieve positive outcomes from IBEN involvement, it is not surprising that all heads of school were supportive and even enthusiastic to some extent. The schools that were able to achieve the IBEN outcomes more quickly seem to have heads of school and other top administrators who offered tangible logistical and financial supports to help IBEs disseminate and apply their learnings throughout the school. Note the differences in the following quotes, which exemplify the difference in level of administrator support between fast and slow schools:

I have full support from the directors and if there's money, then it's right away. Normally, what I ask for, I get right away, with the exception of maybe the sensors for the sciences. That takes a little bit longer, but if I ask for it right now, I would have it in April, let's say, for the next school year. So, it's right away anyways, compared to other places. (Fast A, Coord)

Yeah, I think, yeah, it's valued, of course, it's valued and it's respected and I put limits for myself on how many times I should participate and leave school, but I would never be told no that I can't do it. Maybe if I was gone every month then it would not be acceptable, but, I've always felt there was support from those levels. . . . I've never felt withheld or stopped or hindered in that process at all. If anything, it was supported. (Slow Z, IBE)

Although the head of Slow Z does not directly encourage teachers to join IBEN, she supports their participation and ensures few to no barriers stand in the way. The IB coordinator explained, "If you were to become a site visitor, the school will happily give you time off to do this or provide you to do so, and I encourage you to do so, but there is nothing in the task allocation" that requires it.

*Leadership styles, approaches, and knowledge.* Overall, IBEs appreciated leaders with strong communication (Slow Y, Coord; Fast A, Coord); philosophies of empowering and trusting teachers, modeling values and practices, and shared leadership; and experience and knowledge of IB.

At Fast A, the head of school described teachers as "the ones who manage the school" and her role "to motivate them, to follow, and to coach, and to be on their side—to guarantee that all what they learn comes to the school." The coordinator at Fast D shared a similar philosophy, asserting, "People don't see me as a boss but as somebody that can help along the way." The coordinator at Fast A believes this trust encourages teachers to be more responsible. At Fast C, the leadership team has adopted a modeling approach and "walks the talk," similarly encouraging teachers (IBE).

Leadership at Fast A, Fast C, and Slow Y provide "opportunities for teachers to lead and be responsible for work" through "distributive leadership structure[s]" (Slow Y, Coord). One head of school explained, "If you are smart enough to place those teachers in leadership situations, then you can get the benefits" (Fast A). An IBE at Fast C described some of these benefits, saying,

It feels quite flat in terms of hierarchy and therefore, even coming in as a new member of staff, as a part-time member of staff, I felt like I could share something that would be valued and appreciated by the rest of my department.

Conversely, IBEs at Slow Y and Slow Z discussed drawbacks of shared leadership, specifically efficiency: "It's a quicker process when you've got a top-down" system of leadership (Slow Y). The IBE continued,

It's a pro and a con of the leadership style, that our principal is ready to give leadership and ownership of things to others. But on the other hand, they're not always up to it. And I think he trusts that people are getting things done that they sometimes aren't.

Regardless of preferred leadership style, interviewees generally agreed schools benefit most from IBEs when leaders are familiar with and committed to IB: "You have to believe in the IB program" (Fast A, HOS); "It's very important that your principal and your administration buy into it" (Slow Y, IBE). IBEs at Slow Y described the "big, steep learning curve" for a new principal unfamiliar with IB but appreciated that he "want[s] to understand it." Slow X had a similar experience: "Our principal is new. He just went to his first IB conference and had the big 'A-HA' moment: 'This is what IB is'" (IBE). Heads of schools are not the only ones who have to be convinced of the value of IB, particularly in state-funded systems. A coordinator expressed frustration over the public school system's "draconian" policies and "a lot of initiatives being pushed out from different people" at the district level (Slow Y).

*Creating/maintaining supportive structures.* One of the clear differentiating factors between fast and slow success schools seems to be whether the leadership and/or school community enable the programme to follow IB Standard & Practice B2.4: "The school provides dedicated time for teachers' collaborative planning and reflection." Meeting that standard seems to be highly predictive of speed to success, and if it predicts speed to success, it may affect whether the school can realize benefits from having IBEs on staff at all.

The schools that are able to implement positive changes quickly are those with strong, efficient communication and collaboration structures and systems, both formal and informal.

The infrastructure that they have in the school enables it to happen quite quickly. . . . There was a sharing of the record keeping tools that they were using from other schools. That came back, that was directly implemented in how we could set up our spreadsheets, for example. For record keeping, that was very useful. (Fast B, NonIBE)

In this school, if they go on May or June, everyone knows . . . to communicate, very fast—a month. Then you say that the next month, they will get together again, and will see changes. They will prove that they are doing something about it. (Fast A, HOS)

I think, for me, those kinds of things would happen more organically in the nature of cross-departmental collaboration that we already have, particularly within group six. Philosophically that might be, if we're looking at international-mindedness or we're looking at, if there's something that I've come across, then I'm more likely to share that informally with other people, other departments that I collaborate [with], dance or music for example. Having said that, though, we do have many forums where people can share learning. We have teacher-led professional development on a very regular basis where teachers can sign up to offer a session on something quite specific. There are definitely forums here to do that. (Fast C, IBE)

We then set up professional learning committees, communities where people focused on separate approaches to teaching, and they then did collaborative research, had some description shared readings, and then they peer observed . . . as a two year process. Yeah, so we have a process of launch, implementation, reflection, then refinement, observation, and that becomes part of your personal growth program. (Fast B, Coord)

Due to size, siloed departments, leadership turnover, cultural norms regarding consensus, or other factors, the schools that were slower to implement IBEN learnings did not have as many efficient communication and collaboration systems in place.

We don't have a formal collaboration time built into our timetable. I've been to several schools where we've brought that in. I mean just the amount of change you can do over the course of a school year is incredible. Until we get that structure, I don't think we're going to see a lot of movement. It's going to take us a little time to build it, but I know we'll get there. . . . And the idea of collaboration among our teachers is . . . gaining momentum and I think that's where we will eventually see the benefit because we're going to have teachers talking to teachers in a structured way and we'll have people who come from an IB background and have gone to workshops, facilitated workshops, so I think there's going to be a natural connection there. We're not there yet though. (Slow X, HOS)

We don't have mechanism, and this is what I've talked to [the other coordinator] a couple of times about, we've been brainstorming. That you go to these trainings, you pay a lot of money to send a teacher to a content training. (Slow Y, Coord)

[This] is a very flat country, so hierarchy doesn't work. . . . Everybody needs to feel involved, and that's the expectation as well, so as leaders of this school [it is] difficult to find that clear medium or that good weight upon which consultation and how much is decision making. It goes better when we do consult everybody but come with clear proposals. If we do not offer proposals for change or for review, or things we think would solve, then that's where it stalls. That's the biggest challenge of working in [this country] is the fact that everybody has to have had something to say about a new change. And when everybody's involved it tends to be much more effective and in agreement, everybody comes on board. But the actual implementation, that's a different thing. That's always the next step, yes, is be consistent in the moment. That's just the follow-up that needs done. (Slow Z, IBE)

Structurally, we don't have anything in place [to aid in sharing out learnings] but informally we do. (Slow Z, IBE)

**Number of IBEs on staff.** Interviewees at five sites expressed a desire to have more IBEs on staff. Even at Fast A, which has approximately 20 IBEs, one IBE stated, "I would love to have more IBEN teachers within the school." Another IBE explained,

I think that a kind of small number of people are doing the very best they can, and they're doing a great job, but I think with more, I don't know, more proactive planning

for the workload, and more equitable distribution of things, we could do better. (Slow Y)

Faculty at Fast C, on the other hand, did not express a need for more IBEs, but acknowledged the value of their critical mass. The coordinated stated,

I feel like you can tell when it's a school that doesn't have that kind of level of engagement already in the IB. You can tell. I would say it would be difficult. For a school this big and the sort of aspirations of the school, then I think it's important to have that level of engagement. I wouldn't want any less.

NonIBEs at Fast D and Slow Z disagreed, arguing that students “suffer a little bit” when teachers leave school for IBEN commitments. A coordinator at Fast B agreed with these NonIBEs to some extent, explaining, “If we were a smaller school with a limited faculty, again, I don't want 15–20 percent of the faculty out of school at any given time running workshops elsewhere.” This hints at the possibility that there may be an optimal level of IBEN participation among IBEs in order for the school to benefit.

**Distribution of IBEs across subjects and roles.** Having a critical mass of well distributed IBEs appears to facilitate successful schoolwide adoption of IBEN learnings. Coordinators at three sites described efforts to ensure IBEs in each department so “they're able to share their expertise with others” and make “an enormous difference in the level of implementation” (Slow Y; Fast B).

In Fast B and Fast C, efforts specifically focused on placing workshop leaders in each department. Interviews with NonIBEs at Fast D and Slow Z provide credence to this finding: Neither teacher saw a “clear impact” or “effect” of their colleagues' IBEN participation and noted that no one in their department is an IBE.

While discussing a need for more IBEs, several schools called out specific IBEN roles they would like their teachers to have. Coordinators at Fast B and Slow Z, for example, would like “more workshop leaders” to train other teachers and the Fast B coordinator would like more examiners, agreeing with an IBE that “the number of examiners . . . certainly helps the knowledge that we can give to students about student assessments and outcomes.” He added,

Just because you're an examiner in psychology, that doesn't mean you're particularly useful to the economics guys. . . . [One might] have a workshop leader in science, but then they might be a biologist, and then I've got an examiner in physics and an examiner in chemistry.

Experiences of faculty at Slow X support this argument: “I didn't have collaboration with other colleagues in physics here because there's only one physics teacher for IB” (IBE); “Almost everybody in my department marks or is an examiner” (NonIBE).

The schools best able to quickly incorporate learnings discern adeptly how to maximize the utility of the information within the appropriate time frames for each type of information. Schools that are slower to successfully incorporate IBEN learnings may have more issues with coherence of initiatives and overall programming, particularly in schools that are not completely IB programme focused.

It has to align with our strategic plan. . . . We with our plan, we are pretty tight about not putting other stuff on the agenda. . . . In their department, it might happen within

days. They might go, “Hey I’ve got a great idea.” You know, informally across departments, informally people might chat, it may take weeks, a month. But if we really want to say, “Okay, this is it . . .” That takes years, years to embed. We’ve been doing it for six years here. (Fast C, HOS)

Those people in particular are very, very frustrated by misunderstandings of what IB is, and also, I mentioned initiative fatigue. Many things that are IB are best practices for education. So, trying to explain to people that yes, these things are best practices and they also add something that we don’t otherwise have and that’s why it’s worth doing, . . . we really need to streamline those initiatives under one umbrella. I think we’ve for a long time done IB as a separate thing, like we’re doing work on culturally competent classrooms, we’re doing work on student discourse, we’re doing work on critical thinking, we’re doing work on student engagement, we’re doing work on all of these things. (Slow Y, Coord)

### Context Group 3: Governance, Resources, and School Community

According to interviewees, certain forms of governance, funding systems, budgets, and the community encapsulating the school may limit the ability of IBEs to fulfill their IBEN duties and their impact in their respective schools. Specifically, state-funded schools may struggle with less funding, restrictive district or government policies, and competing district or government initiatives. These factors limit a school’s ability to align to IB philosophy and to support IBEs’ participation in the network by placing strains on resources such as time, professional development, and the number of faculty. School community factors, like whether IB is schoolwide, can similarly limit IBEN participation and impact, though interviewees also indicated that school communities exhibiting high levels of characteristics such as collegiality, confidence, and collaboration foster positive outcomes.

**State or private governance and resources.** State-funded school systems frequently have their own initiatives and goals that may or may not align with IB philosophy and programmes. Additionally, in many cases, state-funded school systems are unable to provide their schools with the same monetary resources private schools enjoy.

A coordinator at a state-funded school described administering the IB programme as “retrofitting,” explaining,

We have to do this. This is our [regional] initiative that we have been tasked with and we want to do it with fidelity. But we also are an IB World School and for a long time we have had a long, hard struggle reconciling those two things. (Slow Y)

Coordinators at private schools agreed with that assessment, asserting, “There are going to be protocols which you have to abide by imposed by whatever state or governmental organization” in state-funded schools (Fast B) and “in public sector it’s going to take a lot of time and contacts who can help you out” to deal with these issues (Fast A). Government policies can interfere not just with the IB programme, but also IBEN participation. An IBE at Fast D explained, “Because we are a public school, . . . we’re not allowed to leave the country very often,” thus potentially restricting IBEN participation, particularly for IBEs in small-sized countries.

Interviewees at all three slow schools described the challenges of state-funding, including cut school days (NonIBE, Slow X); having to “change our program because we are not a private school and because there was a change in the flow of the debt taxes” (Slow Z, IBE); large class sizes (Slow X, IBE); and limited faculty to support CAS, personal projects, and lab activities (Slow Y, Coord; Slow X, IBE). One IBE feels “IB does not necessarily recognize the challenges of a school that doesn’t have unlimited money” (Slow Y). Some private schools acknowledged their privilege, with the coordinator of Fast B recognizing “the very fortunate position of being in this school, which is extremely well resourced.”

In addition to school days, program budgets, and staffing constraints, funding can also restrict professional development opportunities. The coordinator at Slow Y explained, “There’s no money for professional development anyway. Like they cut, and cut, and cut, and cut the sub days back so much, that there’s just no way. There’s no funding to get teachers out of the classroom.” IBENs at public schools added that time constraints may prevent teachers from “talk[ing] about the philosophy of the IB” (Slow Y, IBEN); or reflecting and collaborating (Slow X, Coord; Slow X, IBE). They also described how already overburdened faculty struggle to keep up with workloads and find coverage for teaching responsibilities: “Because we have teachers who overlap in IB and non-IB, they’re sometimes limited in how often they can leave the building, go to workshops, presents at workshops. That’s probably not an ideal situation” (Slow X, HOS). Private schools did not experience the same limitations, with one head of school explaining they have “a really healthy professional development budget. We have the money to send our teachers away on not just IB training, but all sorts of other training as well” (Fast B). An IBE at Fast C supports that assertion, claiming, “I’m getting a lot of professional development in this school.”

Despite these challenges of top-down policies and limited resources, the coordinator at Fast D argued, “By interacting with others, I’ve notice that it doesn’t matter if it’s a public or private school.” Another private school coordinator agreed that public and private schools are “not necessarily different” in ways that would affect IB programmes or IBEN participation. However, with the limitations of government policies, competing initiatives, and public funding, it may not be a coincidence that all three slow schools are state-funded.

**School community and climate.** Several interviewees brought up student demographics, with some explaining that having students with more room to grow allows for a greater impact by IBEs and others suggesting that students who have already been held to high expectations are more likely to succeed in an IB environment and therefore support greater outcomes.

In a public school, we get to see many fulfilled dreams. (Fast D, Coord)

I think our assessment scores have always been higher than the world average. I think in our regular stream school we’ve got a super high standard. . . . The rigor is intense in this school regardless of where you are. (Slow X, IBE)

It’s a choice, they get to choose whether they be there, fooling around, or they do such and such stuff. These students who, they are chosen; they get to be given the opportunity. (Fast A, Coord)

I’ve been teaching a pretty challenging state school not that long ago. And I doubt the students would’ve cared as much. But I don’t want to imply that there’s less buy-ins to

their exams amongst these, sort of, working-class students. I don't think they care as much in that school. (Fast C, IBE)

Educators at some schools with selective IB programmes (all of which were slow schools in our sample), rather than schoolwide programmes, reported divisiveness between the IB and non-IB communities:

Because we're a split school, sometimes there's a little bit of conflict between like regular mainstream teachers feeling like the IB program has been pulling away the academic kids—pulling away the good kids to those classes. (Slow X, NonIBE)

I think historically, in the school, there's been a little bit of a split. . . . There is a cohort of kids that test in to be here, and they test in to be here knowing that they're ultimately going for that IB diploma, whereas the other kids, who are already here, the local population, maybe they will and maybe they won't. (Slow Y, IBE)

These split schools may experience less collaboration, silo mentality, and resentment, which reduce the potential spread of IBEN outcomes. The head of school at Fast A commented,

It's very hard to move the whole school in one way when you have so many years working in another pattern. Not only that, because of the people that you have in school, not everyone is an IB teacher.

An IBE agreed, arguing it's very important "to not have this weird clique thing that happens sometimes" (Slow Y). An IBE at Fast B believes his school has not experienced these issues to the same degree because "most teachers teach IB. It's not like here's IB teachers and here's everyone else."

The rich data from the case study visits also suggest that schools that are able to capitalize on the benefits of having IBEs exhibit a climate that promotes what we are calling the 6 Cs: Collegiality, congeniality, competence, confidence, competitiveness, and collaboration.

Our concept here of collaboration is when, the team can achieve more than the individual. . . . The word is collegiality, for the people who mistake the two for each other. (Fast C, HOS)

Because something that probably is a personal feeling, something that we have learned to do here is to work as a team. If one succeeds, everyone does. So, everything that we do is as a team. (Fast A, IBE)

I think it's competitive, but not in any way a negative sense. It's just one of the . . . I don't want to be like other people. I want to be the best educator I can be. So, we feed off each other. (Fast B, IBE)

Everyone treats each other as an equal. (Fast C, IBE)

Because something important is that in the collaborative meetings we share a lot and our team is very close. That's one of the keys to the success of this school: unity. (Fast D, IBE)

I feel that having people who are kind of in a close ground with the IB, that information we can feel quite confident is correct and we're doing the right thing. (Slow Z, NonIBE)

It's a very collaborative staff, and I think that piece of the culture, and the climate, is awesome. Everybody shares everything, there's no, "This is my thing, and I made it, and you can't have it." People aren't very proprietary about things. The teams really plan together, they really work together, they share all their materials. (Slow Y, IBE)

In our school system as a whole, there isn't a ton of time for . . . collaboration, and I wish there was more time for it. And I think at least in our department, the IB department, they do try to get in a little bit more of that collaboration time where possible, and that's nice. (Slow X, Coord)

The schools that were slower to benefit from IBEN learnings may be more siloed within their disciplines or have fewer cross-disciplinary sharing opportunities. Note the differences in specificity of sharing opportunities between fast and slow schools in our sample:

See, I'm lucky. I work in a small department and so the dissemination of those skills and knowledge is very fast. . . . I would think that some of the departments that are much, much bigger than mine, the way that that impact is felt would be necessarily slower because it's the collegial relationships and the collaboration that you have on all of that work. (Fast C, IBE)

[Cross-disciplinary] would take longer because I'm not having the conversations day-to-day with those departmental members. That might have to be when we have, like, a whole school PD [quarterly]. (Fast B, IBE)

To what extent that's happening all around, it would be nice to have more of those conversations, especially across disciplines. It always comes down to: if we had more time. (Slow Y, NonIBE)

In my department, we have nobody who is actually doing jobs for IB, so in my department, I don't really see an effect. But for the other departments, I can understand that if you, for example, have a moderator or any job that they can definitely bring their knowledge in, but it doesn't reach my subject. (Slow Z, NonIBE)

The schools that were able to quickly apply the learnings from their IBEs focused on getting information out immediately if it could be used quickly to effect change. They are also doing so in an environment filled with colleagues who want to improve. The schools that were slower to disseminate learnings appeared to have fewer expectations, or perhaps, more informal expectations about sharing information, even if it could be used by other teachers to make quick changes.

For some teachers, I'd probably say days, and maybe for others, I'd say months. . . . You get those incredibly keen teachers that want to try new things, and those teachers that are very reluctant to change. . . . I'd say [we have] more innovators than dinosaurs. . . . And then a really big cohort in the middle that is really open to moving forward and changing with new ideas. (Fast B, HOS)

If it was a resource material, you just hand it over. (Fast B, IBE)

There wouldn't be any impediment to instantly sharing something that you thought was absolute gold dust. (Fast C, IBE)

So that if somebody goes and trains you, that can be shared if somebody is doing a particular initiative or something like that, we ask to share best practice. And that is something really that works quite well. And in fact, perhaps even more so than having external people come in sometimes. (Slow Z, Coord)

In terms of structures, is there an expectation? Not a formal expectation to feedback, no. (Slow Z, IBE)

The culture of the school, with its unique student composition and faculty dynamics, generates an environment either more or less open to benefitting from the learnings of IB teachers who participate in IBEN.

#### Context Group 4: Nation and Region

There were a few factors related to the geographic and geopolitical landscape of the schools that seem to have had an effect on the schools' ability to scale IBEN learnings. Simply being closer to IB's global centers or collocated with many other IB schools facilitates networking and professional development opportunities to a degree that cannot be discounted or solved entirely through online opportunities.

Part of it is just face to face, if you can get some face to face, you make connections. (Fast C, HOS)

I guess our location helps just in terms of the ease of getting anywhere. There's a lot of IB schools in the area. If an IB visitor is going to another school, they're not going to have to go far to find the school to go visit. We're not going to lose so many teaching days. (Fast C, Coord)

Ideas will come from many places. But for me, it's a community [with the regional IB association]. (Slow X, Coord)

Other geopolitical factors also come into play, including costs associated with professional development to get to the level of being ready for IBEN participation, and the challenge of engaging teachers in a country where there are cultural norms and practices that inhibit collaboration or spreading information that could be interpreted as "bragging" or showing oneself to know more than one's peers.

Perhaps the problem for countries like us and the context we live in is regarding the cost. . . . It should be more democratic, for more people to access it because there is a lot of talent in this country and it is wasted. (Fast D, HOS)

[Sharing] happens a lot with international teachers. Local teachers are not so collaborative. I don't know why that is, but we have had that sense. (Fast A, IBE)

It's very stressful. Our classrooms are big. I have 34 or 35 students in each classroom. It's very big. This has nothing to do with IBEN, it has to do with [my country's] structure of teaching. (Slow Y, IBE)

Our [planning periods] are not at the same time. We teach a lot of hours compared to other schools around the world. We have a lot of classroom time that we're in. We don't have a lot of breaks built into our schedule. (Slow X, IBE)

Within maybe some nationalities, perhaps a bit more Brits don't tend to brag about these sorts of things [IBEN participation and effects]. It felt uncomfortable to me as a Brit as a matter of fact. (Fast C, HOS)

Many respondents in the case study sites noted the challenges associated with national education systems (e.g., preservice training, national curriculum, assessment systems) that are not aligned philosophically with that of the IB and how this can affect the uptake of IBEN learnings among the broader school community. The fact, however, that the IB community is global, also affords school personnel the opportunity to overcome those challenges by learning from the wider IB community.

The national education system has a very different evaluation system than the international one, which is the IB. That's why we have tried to share with other departments the IB philosophy, so they can understand and start teaching the kids when they are younger. . . . Sometimes they say it's very hard, very difficult, in comparison to the national one, which requires them to only memorize. (Fast D, IBE)

Being made aware that in different parts of the world, that there are different educational philosophies around how students are taught and assessed and that the IB needs to support teachers and students making transitions from prior learning in lots of different ways. (Fast C, IBE)

There's not a black and white answer to everything. You can mold it to your own situation, and there are various models out there of how it's been implemented in their school based on the constructions of whatever their challenges are, either in a nation or the community they're in or the political reasons, et cetera. There's a lot of molding to your specific situation. (Slow Z, IBE)

RQ4: What promising practices arising from IBEN participation can educators and schools enact to facilitate successful outcomes?

*Highlight 4.1: To facilitate successful outcomes of IBEN participation, school leaders can ensure saturation and distribution of IBEs across subject areas and establish procedures for sharing out IBEN learning.*

*Highlight 4.2: To facilitate IBEN participation benefits for themselves and their schools, IBEs can form professional learning communities, engage colleagues in standardization exercises and digital sharing, and reflect on IB feedback with school leaders.*

*Highlight 4.3: Schools with sufficient resources should consider absorbing fees for substitute teachers and employing full-time faculty in core programmatic roles.*

We unearthed myriad promising practices that educators and schools are implementing or innovating<sup>5</sup> as they attempt locally to share learning from their global IBEN access. We discuss promising practices that school leaders can enact directly through formalized policies in (a) staffing and organizational considerations and (b) guidelines prior to and after IBEN assignments. We then present four clusters of promising practices that IBEs can sponsor themselves without formal mechanisms: (a) Forming IBE-specific professional learning communities (PLCs), (b) increasing faculty awareness of locally available IBEN expertise, (c) stimulating collaborative cultures at their schools, and (d) reflecting on IBEN Quality Assurance feedback with their schools' leaders. Finally, we provide two resource-dependent promising practices that might only be feasible in particular International Baccalaureate school communities.

### School Leaders and Formalized Policies

Typically, school leaders' creation or enactment of policy shapes organizational learning. In this subsection, we discuss how school leaders' policies can harness learning from their educators' IBEN participation.

**Staffing and organizational considerations.** School leaders can develop policies to encourage *saturation within their schools of a critical mass of IBEs*. Our findings relate success to having 20–30% of a staff joining IBEN. Involvement above that level could present risk: top educators might be out of school for long and/or crucial time periods (Fast A; Fast B, Fast C; Slow Z). As we saw in our slow schools, large, comprehensive state-funded schools or schools lacking strong collaborative systems might require higher proportions of IBE participation to ensure that IBEN learning permeates. Although school leaders do not decide who is selected into IBEN, they can encourage application submissions, support existing IBEs so they can continue their responsibilities within IBEN, and strategically hire existing IBEs.

Of equal importance, school leaders can encourage *distribution of IBEs* across subject areas or departments and IBEN-relevant expertise (i.e., external examinations by item, internal assessments, programme-specific facets, or core issues of International Baccalaureate philosophy and pedagogy). One NonIBE (Slow Z) lamented, "In my department, . . . we have nobody who is actually doing jobs for IB, so in my department I don't really see an effect." Encouraging faculty within each department to have an IBE may support the dissemination of IBEN learning and participation outcomes.

Furthermore, mature schools can *develop a matrix of who their IBEs are and the type of expertise they have*. Surprisingly, few schools seem to do so. School leaders can feature such data in annual reports to governing agencies or in promotional campaigns (Fast B; Fast C). They can also use the data to share with their faculty and to inform recruiting efforts when filling staffing gaps. Start-up schools can consider IBEN experience a desirable hiring criterion (Fast C). One interviewee said that IBEs talk about "the next fun place to work," so school leaders can capitalize on this tendency, creating a recruitment loop in which IBEs encourage their colleagues to apply to IBEN.

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<sup>5</sup> In most cases, these promising practices stem from reports of what schools had already engaged prior to our interviews. We denotate such practices by including the school's speed and letter, as we have done elsewhere in this report. In a few cases, we report ideas for promising practices that interviewees mentioned as within-reach aspirations or ideas they germinated during the interviews we conducted for this study.

By *intentionally hiring and tracking based on IBEN expertise*, schools could identify IBEs to head relevant departments or lead relevant professional learning communities (Fast B, Fast C, Slow Y). They could even form leadership teams composed mostly or solely of IBEs (Fast A, Fast D). For school leaders who do not control hiring, they can situate IBEs' classrooms strategically so they work in close proximity to other IBEs or to educators who need additional support (Slow Y). The same school leaders can also assign as many educators as possible to engage with *both* International Baccalaureate and non-International Baccalaureate coursework, expanding the within-school reach of IBEN learning (Fast A, Fast B, Slow X, Slow Y).

In some cases, school leaders can limit the number of courses educators must prepare, focusing attention on IBEN learning more discretely (Slow X). To avoid the fate of schools lacking means to articulate learning (from IBEN or otherwise) horizontally and vertically (Slow Y), school leaders can, when they have the authority, build professional learning days into calendars and protect *dedicated collaborative time* as sacrosanct (Slow X, Fast B, Fast C). Frequency and consistency of meetings seem very closely linked to speed to success. For example, fast schools have some or all of the following that local constraints might prevent in some schools: annual multiday pedagogical retreats, quarterly vertical articulation meetings, weekly departmental meetings, and PLCs.

**Guidelines prior to and after IBEN assignment.** School policies regarding permission for accepting IBEN assignments vary widely. Some schools impose limits by either number of assignments (2–4 was typical) or days out of the classroom (2–10). Some schools do not have explicit policies. Others have explicit policies, but IBEs tend to be unaware of them. Still others have explicit policies but make ad hoc exceptions. Some schools allow examiners to use otherwise untasked time at the end of academic years—time when students are otherwise engaged in self-directed learning or extracurricular activities—to mark exams. In some schools, examiners would never deign to ask for that allowance or such actions would run afoul of local norms or union and/or legal considerations. The promising practice seems to be this: school leaders and their IBEs should *discuss local needs, devise policy* (implicit or explicit), and *follow it*. Additionally, school leaders might find success by allowing IBEs to take assignments that meet specific objectives (a) from their professional development plans or (b) aligned to a school's strategic plan rather than taking "a free ride" (Fast C). Where possible, school leaders can send IBEs to events together, facilitating off-site collaboration time for the pair or group on IBEN assignment (Slow X).

Few case study schools had, but many interviewees sought, *mandatory procedures and clear guidelines* for sharing IBEN learning upon return, an area of schools' experimentation. School leaders can place a standing item on leadership team meeting agendas, inviting IBEs in to expand organizational learning and avoid pocketing innovations (Fast A). At some international schools with greater scheduling flexibility, IBEs return to lead abridged or full versions of their IBEN workshops. A less-intensive approach might be a roundtable share-out (Slow X) to avoid the problematic social dynamics of turning an IBE into the "sage on a stage." Some schools send out a monthly newsletter that can feature IBEN experiences (Slow Y). Others expect IBEs to post on a blog after an IBEN event (Fast C). Regardless of the sharing mechanism, school leaders should monitor progress of what is learned and ensure dissemination (Fast A).

**IBE-specific professional learning communities.** In many schools, IBEs start pedagogical conversations (Fast C; Fast D; Slow Y), so *harnessing their capacity into a PLC* would benefit most

schools. Many IBEs bemoaned a lack of “specific time where IBEN members get together” for idea and experiential exchange (Fast C). One coordinator identified the absence of an IBE-specific PLC as a “lost opportunity” (Slow Y). In some schools, IBEs come together to determine goals and agendas for in-school professional development sessions (e.g., Slow X) or leverage their IBEN contacts to host dynamic guest speakers (e.g., Fast B). Interviewees agreed their shared pursuit of a schedule with built-in collaboration time is a major ingredient in their success recipe.

**Increase IBEN awareness.** At several case study sites, sign-up sheets for interview slots became the first time IBEs learned the entirety of their in-school colleagues who were also in the network (Fast B, Fast C). In that IBEN lacks sufficient brand recognition (see RQ5), IBEs and NonIBEs had “no idea” which, if any, of their in-school colleagues were in the network (Slow Y, NonIBE). This sentiment was the most common point of agreement among NonIBEs, regardless of school context. Therefore, many IBEs and NonIBEs came to the same conclusion: schools should *make teachers aware of the IBEN resources in their midst*. According to one coordinator (Fast B), “One thing that doesn’t happen is the IB [does not] tell me if one of my staff has become an IBEN [member]. . . . I’ve got no way of knowing that unless [the IBE] tells me.” But schools need not depend on the organization; they can internally share who their IBEs are and what expertise they have (see Slow Y). Extending that idea, schools can publicize their local IBEN expertise through network connections, expanding spheres of influence and faculty access beyond their walls.

**Stimulating collaborative cultures.** IBEs reported two main areas in which they can stimulate collaborative cultures: *digital sharing* and standardization exercises. Within schools and across the network, most IBE described (a) membership in and use of WhatsApp, Facebook, or LinkedIn groups to share ideas and/or (b) frequent use of Google Drive, Wikispaces, and/or Dropbox to trade and organize resources. Such practices facilitate collaboration across hallways or continents, but also eliminate information black holes in which information stays “with just that teacher [instead of being] shared to the larger community so it’s not a one-and-done workshop,” according to one coordinator (Slow Y). Of greater import, digital sharing leads to digital archiving, which is essential to preserve institutional memory through “a succession plan developed for when [our coordinator] one day leaves us” a head of school (Slow X) said.

Many schools *employ standardization exercises* such as “cross marking” (Slow X) in which all teachers of a given subject mark student examinations and then compare results. In one case (Fast A), an IBE led all teachers to take an entire exam “with the same distance [between seats] and everything just so the teacher gets the entire experience [of] what the student is going through . . . with the pressure of the time and everything.” Such practices make educators dependent on one another and seemingly more willing to collaborate.

Several schools implemented open-door policies so they could see what learning looked like in each of their classrooms (e.g., Fast B). Finally, some schools have expanded their collaborative cultures to include colleagues in neighboring or distant schools through “InterTOK” or “InterCAS” events (Fast A; Fast D). These events feature student and faculty collaborations for Theory of Knowledge-related seminars or Creativity, Action, Service projects across International Baccalaureate campuses, resembling the annual International Baccalaureate World Student Conferences on a smaller scale.

**Reflecting with school leaders.** When discussing possibilities to intersect IBEN and on-campus work via conversations with school leaders, the overwhelming majority of IBEs relayed comments similar to what one IBE (Slow Y) said, “We don’t talk about my role as an IBEN educator.” Interviewees at Fast B provided isolated examples of brief or informal reflective conversations with school leaders, but never to the extent of *collaboratively reviewing Quality Assurance feedback*. By contrast, an IBE at Fast D analyzes feedback with colleagues, the coordinator, and students, and at Fast C, some IBEs and NonIBEs connected IBEN feedback to professional learning plans. At the latter, faculty self-formulate a plan and lead a conference with a mentor or school leader. Interviewees cited examples of their suggestions to assume new IBEN roles as a developmental step or mentors giving “a direct nudge.” Another IBE (Slow Y) concluded, “A lot of times, administrators do not realize the value of the resource that they have” with IBEs on campus and “should be leveraging that more than they are.” Reflective sessions could help school leaders identify such value. One reason for the infrequent occurrences of reflective sessions with school leaders is that many IBEs “didn’t even realize [IBEN feedback] wasn’t even shared or not accessible” (Fast C). Therefore, meaningful conversations between IBEs and school leaders might “empower the people who have the knowledge to take leadership roles,” according to one coordinator (Slow Y).

**Resource-dependent promising practices.** Some promising practices for sharing IBEN learning seem worthwhile, but depend upon school funding and/or individual teacher financial or personal situations:

- Schools absorbing fees for substitutes (i.e., casual teachers) can enable IBEN participation. Self-funding such costs might restrict participation among educators (a) with few or insufficient personal/vacation/sick days, (b) with young children or other vulnerable dependents, or (c) who are sole caregivers.
- Full-time faculty in core programmatic roles (e.g., Exhibition in the PYP; Personal Project in the MYP; Extended Essay or Creativity, Action, Service in the DP) are well positioned to disseminate IBEN-learned knowledge across and beyond school walls.

In summary, many potential actions that could be taken by schools to maximize benefits from having IBEs on staff arose from the case study data. Next, we turn to recommendations for how the IB’s IBEN staff could facilitate individuals and schools benefitting from IBEN participation.

RQ5: What changes and supports can IB initiate to maximize positive IBEN outcomes for educators and schools?

*Highlight 5.1: Few IB teachers, including IBEN members, are aware of the network. To raise awareness, IBEN can focus on redefining and disseminating its brand at workshops and with the help of high-achieving IBEs.*

*Highlight 5.2: IBEN may function more like a network if IB planned meet-ups among members and provided more frequent and relevant communications to members. Some of this communication could include tips IBEN members could take at their schools to maximize schoolwide benefits.*

*Highlight 5.3: Establishing an explicit IBEN career progression may support efforts to create networking opportunities and maintain IBE engagement.*

We offer seven recommendations to help IBEN better meet needs for IBEs and their schools. We ordered recommendations from most to least prevalent in the data, approximating where changes might be most impactful for the network and its participants.

### Strengthen the Brand

One of the clearest takeaways from 40 hours of interviews is that few people outside, and only some inside, IBEN know about the network. The name resonates with few NonIBE faculty, though IBEN roles do. Several IBEs perceived difficulties delineating IBEN information from general International Baccalaureate information. One IBE (Fast B) said, “Nobody would know the acronym IBEN unless you’re in it.” A dialogue during one group interview at that school summed it up:

Interviewee 1: We never even use the word IBEN.

Interviewee 2: No, right. That’s why I was confused. I’ve been here 9 years. I’ve gone to tons of workshops . . . IBEN . . . I was like, what is this?

Interviewer: As a term, it doesn’t resonate?

Interviewee 2: No.

Interviewee 3: No. Never even heard it.

Interviewee 2: Like zero percent.

Interviewee 1: I just heard workshop leaders . . . and examiners. I never heard it being categorized as a specific thing.

Interviewees confused IBEN with a spate of International Baccalaureate web portals such as MyIB, IBEN Central, IBIS, IBDocs, and the “river of OCC stuff,” said one NonIBE (Slow X) when referring to the defunct online curriculum centre. To avoid the current situation in which many educators do not “know that there is a network that exists out there” (Slow Y, Coordinator), IBEN can redefine its brand and disseminate anew in two ways. IBEN could *pitch its redefined brand at workshops*. Every plenary session at IB workshops should feature advertisements for joining IBEN. Those advertisements might extol key findings from this report, other reports of IBEN, or other indicators of the value that IBEs tend to derive from network participation. The IBEN could *enlist “champions” or high-achieving IBEs* to intentionally raise awareness of IBEN.

### Help the Network Function More Like a Network

Our data show disagreement about the degree to which IBEN is a network. As noted previously, some IBEs feel their professional circles grow instantly. Others do not view IBEN as

a network collaborative activity. The offering of the work, me producing it, and then delivering it? That’s not collaborative, that’s individualistic. It’s collaborative in the workshop with the participants, but they’re not members of IBEN. . . . In terms of working with the other IBEN members, the only networking that takes place is you have a coffee break, you sit around with the other workshop leaders and have a bit of a chat about “How was your flight?” and “Where have you come from?” and “What are you doing next?” . . . To call it a network I think is a misnomer. (Fast B, Coordinator)

Many interviewees reported that examiners, who work remotely by computer, feel especially isolated. Two at Slow Z would prefer training, at least, be in-house to facilitate networking. Overall, IBEs interviewed wished “IB could help us connect those educators in whatever form” (Slow X, Head of School). Another head of school described the network as

a hub of information with radial arms, like spokes from a wheel, heading to all these examiners and workshop leaders that are sitting around the edge of the wheel, rather than a web of interaction between the workshop leaders. (Fast B)

Absent a mechanism to engage in a more personal, sustained way than logistics and simple information exchanges, questions will remain such as, “What’s the incentive to be part of the network? . . . IB wants to network, but does the network want to network?” (Fast C, Head of School). Even from an external view, one NonIBE (Fast C) said, “You can’t be in a network if you have no idea that you are in it or who else is in it.”

Interviewees proposed several approaches to enhance network connectivity. The coordinator from Fast B wants to *meet with job-alike colleagues* so he can improve his craft as a workshop leader. Not assuming he has already “reached some sort of zenith or pinnacle,” he knows that hundreds of other providers of his workshops exist, so he wants to learn from and with them. A peer at Slow Y noted, “It’s cool that you get to train adults in [a resort city],” but suggested the possibility of *leading workshops across regions*, exposing IBEs to various cohorts of workshop leaders and clientele. She recognized the trade-off, however, between such a powerful learning opportunity and additional expenses. Thinking about linking up examiners, one IBE (Slow Y) urged *more frequent and more personal communication from subject leaders*. More personal than subject reports, a regular newsletter or update email about what is happening in the subject, especially showing international variation, might make examiners feel more connected to IBEN. This can be applied also to the IBEN itself, with IB staff sharing IBEN tips, such as promising practices from this study, to guide IBEN members in how to maximize benefits for their schools.

### Establish an Explicit IBEN Career Progression

IBEN may consider the following synthesis of recommendations from interviewees as IBEN staff members seek a more elaborate way to connect IBEs deeply to the network. Instead of IBEs acting as independent contractors who meet organizational needs at discrete points in time, they could follow a well-defined path, which interviewees referred to alternatively as a hierarchy, ladder, or pyramid. An *explicit IBEN career progression* could eliminate the concern that IBEN appears to be a network but does not function as one. A career progression would capitalize on IBEs’ existing long-term relationships with IBEN, assuming a five-step process:

1. Codify IBEN’s various roles into levels (see Figure 6)
2. Standardize formal evaluations per role (presently, only some roles incur formal evaluation; others, site visitors for example, do not)
3. Develop a scoring system or series of leveled thresholds, showing IBEs how to ascend
4. Establish relevant rewards corresponding to levels or at least the top of the pyramid

5. Advertise extensively so IBEs associate themselves with climbing the pyramid



Figure 6. Proposed IBEN career pyramid.

Following this study with additional qualitative data collected specifically from IBEN-identified top performers (i.e., IBEs who have climbed the metaphorical ladder) could inform these steps, guiding IBEN to optimally identify, recruit, train, and retain IBEs throughout their career progressions.<sup>6</sup> Codified roles, standardized evaluations, and a comprehensible scoring system would engage IBEs in meaningful feedback loops that foster coherency and growth within and between IBEN roles. These steps would also enable IBEs to overcome learning plateaus that many IBEs described as reasons why they suspended their IBEN involvements. Examiners, in particular, felt they learned the most at the outset. Therefore, several interviewees sought guidance on how to change tasks, subjects, roles, and regions, assuming such alterations are permissible. Such process changes could also mitigate IBEs’ frustrations with the perceived mystery around role and opportunity selection. “There’s no feedback about why you’re selected or not,” said a coordinator (Slow Y).

One coordinator (Fast B) suggested a reward schedule based on an invite-only global annual summit that would pair IBEs with job-alike experts and IBEN-identified top performers at their next level of the pyramid. The College Board organizes annual gatherings of examiners, though its purpose is more to score exams than for networked collaboration. At the IBEN version, IBEs could experience something that eludes them at typical workshops: meeting other IBEs to ask, “How do you do this? ‘What resources do you use for that?’ It would be great” (Fast B, Coord). The summit could recoup its expenses with a fee schedule that charges those in roles (e.g., school visit team leader, school

<sup>6</sup> Though outside the scope of this project, additional analyses of extant data might kickstart such a pursuit.

consultant, content developer) higher in the pyramid (and therefore more experienced) less than those new to IBEN roles (e.g., examiner, course outline reader) or a sliding scale that corresponds roles with years of service and/or assignments completed.

Mindful of costs, the coordinator opined, “We’re not going to be talking about an awful lot of people” but even if IBEs needed to pay a nominal fee, “you’re going anyway.” If IBEs buy into the idea, IBEN could convert IBE status into an identity. With an explicit pathway and criteria to ascend levels, IBEN could create recognizable experts and generate interest in working with them. IBEN could even host a digital IBE directory that enables schools and regional associations to tap into available expertise. Ultimately, this structure could act as the merit badge system that so many IBEs seem to respond to implicitly, now explicitly incentivizing recognition of IBEN career progression as an identity to be nourished. The pyramid might even inform coordinated, specific professional development opportunities, such as including workshop leaders on site visit teams to ensure they understand schools’ varied needs (Fast D, IBE).

Our data provide solid evidence that an implicit hierarchy—one multiple interviewees described as an opaque ladder—already exists. As a further argument for a well-defined pyramid, one IBE (Fast B) wondered, “Why are not all IB teachers automatically members of IBEN? Because it seems the entry point is as an examiner.” Instead, one coordinator (Slow Y) likened the current network to “these magically select few, like you were in a secret society, and nobody knew how anyone was actually tapped on the shoulder for that.”

### Target New Recruits

Many interviewees suggested an *assertive, targeted approach to recruitment*, especially among educators new to the profession, but already demonstrating promise. One coordinator (Slow Y) appreciates “experts from the ‘80s” for their “gravitas and authority and lots of experience, but I’m not sure it pays as much as a young person in the trenches.” Targeted recruitment could either support a career progression or simply provide intrinsic value. As one target, IBEN could identify recruits from lists of educators whose students score consistently well on assessments. IBEN also could solicit IBEs, coordinators, and heads of school to nominate colleagues who demonstrate measurable or intangible qualities that align with IBEN tasks. IBEN could concentrate its efforts on schools recently authorized, following some IBEs’ assumptions that such schools are likely to house energetic educators who have not yet joined IBEN. The recruiting approach should marshal findings from this report, selling benefits of deeper engagement and feedback opportunities. IBEN recruiting is perceived by some to have depended on “an old boy/girl network,” one coordinator said. Now, the network needs systematicity to grow the next generation of talented IBEs.

### Engage the Core

Perhaps due to highly departmentalized school structures or traditional organizations of curriculum, many interviewees reported difficulty crossing from discipline-based education through the centers of the programmatic diagrams. As one respondent (Fast C) said, “Most IBEN jobs . . . are subject-specific. . . I’m a physics examiner; I’m not a creativity examiner.” IBEs requested *more guidance on transdisciplinarity and opportunities to conduct Category 3 workshops* based more on skills and dispositions than content knowledge. Although the limited transfer we observed might be a function of disproportionately recruiting Diploma Programme schools, one NonIBE (Fast D) cited the struggle

to teach effectively in the spaces between traditional disciplines, because “none of them belongs to our subject.”

### Alleviate Technical Challenges

Several interviewees raised technical concerns, first asking IBEN to *clarify communication procedures*. Heads of school suggested weekly or monthly email digests, summarizing and allowing readers to click on items of greater interest, thus avoiding the clutter of current experience. Relatedly, simplifying the assignment procedure from demonstrating one’s interest/availability only to wait a substantial amount of time before learning about selection led many IBEs to over- or under-schedule. Many IBEs wondered why they do not immediately receive confirmation after applying for roles, assuming they are in good standing with IBEN. One coordinator (Slow Z) has “heard absolutely nothing from the IB,” beyond notification that his application was received, in the nine months since submitting his application. Furthermore, IBEs asked that their IBEN Central profile better filter out irrelevant roles. A coordinator at Fast B stated,

Don’t show me PYP investigation workshops, which I am not going to run. They fill up my feed for 4 pages, and I’m never going to get past them, because I don’t have the time to go through that stuff. . . . You know on your system the stuff I run; only offer me that stuff.

Examiners were similarly flummoxed after receiving requests for applications and submitting the applications only to learn there were no scripts available. Perhaps IBEN could provide IBEs with a prospective accounting of anticipated needs based on enrollments and/or annual trends. Then, IBEs, especially those with multiple areas of expertise, could make informed application choices.

After tidying communication processes, many IBEs sought regulatory clarity around what resources they were and were not allowed to share with colleagues and workshop participants. Interviewees described receiving inconsistent messages on this front.

Another area of concern stemmed from a common request for IBEN to *show greater sensitivity to IBEs’ calendars*. According to one examiner (Fast B) whose perspective reverberated across the data, “I don’t want to grade another 100 exams when I’m grading and still have a 100 students’ stuff to grade myself from my own classes.” According to a workshop leader (Slow Y), workshops in October are impractical in his context

because I have college recommendations to write [and] all kinds of school responsibilities. There’s a rhythm to this thing. If you want [high participation,] you’ve got to find spots where people can make room for it in their world. It’s hard for people to drop everything.

Another IBE (Fast C) wished that assigning staff would heed the workflow of IBEN tasks: “Just as you’re coming up for air, they throw you another.”

Last, IBEs believe they could enhance their IBEN experiences if technology *digitally enables documented learning*. Within the examination platform, IBEs would like to annotate observed trends that might resurface “50 papers from now, so I don’t want to have to call the chief examiner and ask that question again” (Fast B, IBE). Such an innovation would also enable an examiner to better serve

students by more accurately recalling specific instructional tips, the primary benefit examiner interviewees described.

### Leverage Parallel Networks

Many interviewees were members of networks beyond the International Baccalaureate universe. Such parallel networks often featured IBEN colleagues but included learning opportunities for IBEs and NonIBEs alike. Finding ways to *tap into parallel networks* or link learning between them and IBEN could yield exponential growth. International Baccalaureate tracks the work of some state, regional, and national associations, but several interviewees participate in accreditation agencies or job-alike groups beyond International Baccalaureate's purview. Some of these networks grew organically through Facebook or similar platforms. Others were face-to-face, managing to avoid the high price tag of desirable International Baccalaureate opportunities (e.g., global conferences). To some interviewees, parallel networks were more important than IBEN, easier to organize locally, or more targeted and relevant. As one NonIBE (Fast B) said, "If you're all in that IB box, then you don't have people . . . seeing with a different lens."

## Network Outcomes

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Research questions for this study did not specifically ask about outcomes at the network level, but they seem to be central for this inquiry. Fortunately, the impact model provided us an opportunity to code those outcomes alongside the components that indicate what IBEs and their schools derive from network participation. For a full listing of network outcomes and representative comments from site visit interviews, please see Appendix K.

Sustained engagement and aligning to International Baccalaureate received the most attention in the interview data about network outcomes. Interviewees seemed to find IBEN-task staffing and per-teacher variance in students' scores to be far less important. These data suggest a divide between what school-based individuals care about and what the network was designed to prioritize. This provides a meaningful caveat, because school-based individuals were the sole data source for the case study phase. For coded quotations in this area, negative commentary outweighed praise. In concert with effusive admiration of IBE and school benefits, coding of network outcomes data clearly supports our recommendations. Several interviewees described ongoing relationships with IBEN that have lasted 2–3 decades, many calling the experience impactful and rewarding. Still, a substantial number of interviewees were concerned about inadequate compensation (Slow Z), “a ceiling of learning” (Fast C, IBE), or other limited returns on time invested. To one IBE (Slow Y), IBEN participation “alternates between energizing me and almost killing me pretty much every year.”

On one hand, IBEs at Fast A see their network participation aligning their school culturally and pedagogically to IB through greater adherence to the Learner Profile, student-centered practices, international-mindedness, and other core features of International Baccalaureate such that they “breathe IB as a way of life.” Similarly, IBEN participation has helped Fast D produced students who “are more environmentally conscious, have leadership, and want to make a better world.”

On the other hand, we found limited evidence for reduced variance in the quality of IBE products. One IBE (Fast C) observed general improvement in workshop quality, but noted some colleagues return feeling like “that was just a waste of time.” Sources of workshop criticism included a perceived lack of time for IBEs to make workshops engaging, merging training categories (i.e., 1 and 2), and insufficient oversight for online workshop leaders.

In terms of reducing teacher effects on differences in students' exam scores, no interviewee was willing to make causal claims because variations that schools observe annually are so slight, seemingly cohort dependent, and likely byproducts of a host of variables. According to one coordinator (Fast B), a causal assertion about decreasing score variance would be “rash” and examining scores per teacher would lead to “a witch hunt.”

## Conclusions

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This section provides additional insights about speed to success and the limitations of and next steps for this research.

### More Thoughts on Speed to Success

This research project was designed to allow us to examine factors that may hinder or delay successful dissemination of IBEN learnings throughout a school. Hence, the design included success cases that were able to quickly achieve the benefits of having IBEs in a school and cases where the benefits were achieved at a slower pace, which could suggest areas where other schools become stymied from benefiting from IBEN. Two major sets of factors seem to have had the largest effects on the speed with which outcomes were achieved, based on the seven cases in our study sample. These factors are summarized below.

### School Differences

The most obvious difference between the fast and slow schools, all of which have successfully incorporated IBEN learnings schoolwide, is that most of the fast schools are private and all of the slow schools are state-funded. One state-funded school in our sample was quick to implement learnings, and that may be due to its unusual (for a state-funded school) structure of having 2 hours every week devoted to IB teacher communication and collaboration.

The level of tangible support from the school's leadership appears to be an important factor influencing the speed to success and, therefore, may be a factor in achieving benefits from IBEN participation at all. The IBEN team at IB may consider how best to reach heads of school to support IBEN participation and emphasize the benefits that accrue to schools from that participation.

Schools differ greatly in the structuring and provision of common planning time. Teachers in the schools that were slower to implement IBEN learnings struggled to find the time to come together, with much of their communication and collaboration happening via email and other informal means. Schools that could quickly implement IBEN learnings ensured there was common planning time, a range of meeting types that brought different groups together, and regular professional development.

### Information Differences

Successful schools in our study effectively and very quickly disseminated information if immediate improvements based on that information were possible. This ability to discern what information could be used to make immediate changes combined with having the communication avenues in place to maximize spread and a school culture that welcomed change seemed critical to obtaining the full benefit of IBEN participation. Add into this mix the need for the school to have a coherent set of structures and programming for change to take root, and it is clear that many schools will struggle to benefit as much as they could from having IBEs among their faculty.

Discipline- or grade-based silos within schools are also detrimental to effective uptake of IBEN learnings. Schools with cross-disciplinary collaborative cultures are able to share and process the myriad types of information and new skills that IBEs can cultivate. Effective dissemination schoolwide requires faculty being ready to understand how the new information fits into the larger schema of

their knowledge base and how they will be able to apply the new information. School faculties with a history of speaking cross-departmentally may find it easier to maximize IBEN learnings, regardless of the discipline from which a particular IBE derives expertise.

### Limitations and Directions for Further Study

Two limitations are important to contextualize this study: the extent to which it can support causal inferences and interviewees' varying degrees of hubris or modesty. Regarding causality, we found that about 15% of interviewees strongly asserted IBEN as *causing* their individual success and success at their schools. Another 15% or so adamantly opposed causal claims. The majority fell in the middle. This distribution of opinions is important because we adhered to Brinkerhoff's (2002) Success Case Method, finding mixed evidence of causality. This was not an empirical test of causality but rather a rigorous mixed method examination of what successful uptake of IBEN learnings can look like in a school.

Colleagues' comparative opinions about causality show discrepancies. When one head of school (Fast A) hears her teachers speaking "the IB language," she "can prove that this is working." By contrast, her coordinator cannot ascribe school success to IBEN "because so many things are going on at the same time. But it's a good thing in general terms." At Fast B, the head of school has nothing "concrete to hang this on" due to the difficulty of isolating variables about any initiative and the inevitable variability among cohorts, but still concluded that IBEN participation "must have a positive impact. I don't think it can have a negative impact." His coordinator sees IBEN effects but "not in a measurable way," rather "through sort of qualitative discussions rather than quantitative ones. You would say, 'Yes, when people [join], stuff improves.'" That improvement might come from enhanced pedagogy due to differentiation or other approaches, greater familiarity with assessments, simply more experience, or many other factors.

At Fast C, one IBE suggests reciprocal uncertainty about the degree to which his school influences IBEN or IBEN influences his school, "but we're both in the same direction." His colleague is "not convinced there's been too much of an impact schoolwide." The mechanism of self-selection into the network casts some doubts about whether IBEN's causal effects can even be detected through research (see Shadish, Cook, & Campbell, 2002). Meanwhile, an IBE (Fast D) confidently describes "a before and an after" among IBEs: "The change in the personal aspect is amazing because you come from being a classroom teacher to be a teacher of life." A 'black box' seems to obscure the source of success for one of his NonIBE colleagues, who credits IBEN as one factor, along with help from colleagues at other schools, student enjoyment of classes, and other factors until, "in the end, the results are better." Given the assertion of some key informants that IBEN participation should yield better exam scores, it would be worth additional study to determine empirically if students' marks improve after the teacher's IBEN participation, controlling for student, teacher, and school factors. As one particular confound of the current study, the coordinators at all of our case study sites were IBEs, denying us the opportunity to examine how IBEN affects a school when a coordinator is not part of the network. On the other hand, having coordinators participate in IBEN may be a key factor in why these schools appeared to successfully integrate IBEN learnings schoolwide.

Another issue that may be a limitation of the study stems from the tendency of some interviewees to aggrandize themselves as the only educators in the world to reach a certain level of proficiency or

status. Contrarily, some IBEs were so modest that they appeared uncomfortable even being described as high-quality educators. Cultural norms and/or personal proclivities might have led some interviewees to over- or under-describe the extent of their successes and those of their schools. On average, though, this study tells a reasonably comprehensive story of what objectively successful schools are doing with, and perhaps because of, IBEN participation. These findings should offer a useful set of context-specific applications, promising practices, and organizational recommendations.

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# Appendices

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## Appendix A: Methodological Approach

This section details the methods we have used in this study: (a) a three-stage literature review, (b) interviews with key informants who work directly or indirectly with IBEN, (c) a process for designing an impact model, (d) development of a survey to identify potential case-study sites, (e) selection of case study sites, (f) site visits, and (g) analyses of interview data.

### Literature Review

The systematic process Inflexion used to identify literature to review for this study included three stages. First, Inflexion researchers searched for scholarly literature in four databases: Education Resources Information Center (ERIC), Education Abstracts™, Professional Development Collection, and Educator’s Reference Complete. From these databases, we excluded dissertations and theses, seeking instead original studies or research reviews/meta-analyses from peer-reviewed journals, government reports, or technical reports and/or research briefs from well-established research centers. Inflexion searched for combinations of specific keywords and their variants (see text box). Based on the expertise of this study’s principal investigator and expert consultant, we added author search terms to emphasize the seminal works of Thomas Guskey, Ann Lieberman, Peter Senge, James Spillane, and Judith Warren Little. The series of Stage 1 searches produced a total of 91 unique results.

**Search keywords:**  
Critical thinking  
Educator  
Engagement  
Inquiry-based  
Meta-analysis  
Motivation  
Network  
Organizational learning  
Ownership  
Professional development  
Problem solving  
Professional learning community  
School outcomes  
Student outcomes  
Teacher  
Train the trainer  
Trainer  
Writing

Second, we met internally and with International Baccalaureate to identify topical gaps that remained after Stage 1. Following those meetings, we incorporated another 10 well-cited articles on organizational coaching and 12 well-cited articles on effective instructional practices. To ensure the most expansive view possible on the topics of interest, we reviewed titles and abstracts of the 113 articles in the revised literature pool to inform a two-step follow-up process. We performed modified ancestral searches (i.e., examinations of articles in Reference/Works Cited sections) and descendant searches (i.e., Google Scholar searches of articles that cited those articles) from the revised literature pool. These searches produced a total of 1,791 hits, from which we identified 82 as potentially relevant, expanding the pool to 195 articles.

Next, we sought to add large-scale quantitative studies, which seemed absent after Stages 1 and 2. Consequently, we used SCImago’s most recent data year (i.e., 2015) to identify highly ranked journals that focused on professional development, educational effectiveness, and/or school improvement. We delimited its search to SCImago-ranked journals in the first or second quartiles (i.e., above the median rank) of 1,066 peer-reviewed journals that examine education as a social science. We identified the following five journals as fit for purpose: *Assessment for Effective Intervention*, *Improving Schools*, *Journal of Research on Educational Effectiveness*, *Professional Development in Education*, and *School Effectiveness and School Improvement*. EPIC reviewed titles and abstracts of articles published in these

journals from January 2007 through April 2017, identifying 116 as worthy of potential inclusion in the revised pool, which grew to 311 articles by the end of Stage 3.

Having established a saturated and diverse pool, we reviewed the abstracts of each citation, leaving 115 articles for initial inclusion in an annotated bibliography (see Appendix G). In that review process, Inflexion's evaluation manager and content expert for this study each reviewed the 115 articles' titles and abstracts independently, filtering the number of studies in the annotated bibliography to 89. As we drafted and revised the annotated bibliography, we excluded any article that was not pertinent to the evolving needs of the study (e.g., inquiry-based learning was an early focus of the study, but triangulated findings from interviews, International Baccalaureate documents, and scholarly literature led to the de-emphasis of inquiry-based learning), provided duplicative information, or demonstrated serious methodological weaknesses. In some cases, we excluded articles in areas where the included literature indicated saturation. In these cases, we prioritized the stud(ies) that demonstrated stronger methodolog(ies). In its final iteration, the annotated bibliography incorporated 74 articles.

## Interviews

Concurrent to the literature review, Inflexion researchers interviewed key informants from the International Baccalaureate staff who coordinate IBEN activities to guide researcher understanding of potential educator and school outcomes thought to be associated with IBEN participation, along with the facilitators and barriers that might affect those outcomes. The IBEN staff suggested five key informants with input from Inflexion for interviews that we conducted via Skype or phone to inform development of the IBEN impact model. Key informants were individuals within International Baccalaureate whose roles connected them to IBEN either directly or indirectly. Titles of interviewees included the following: Associate Manager for one of the three International Baccalaureate regions (i.e., Africa, Europe, Middle East; Americas; Asia-Pacific); Director of Professional Development; Global Head of IBEN; Head of International Baccalaureate World Schools (Private Schools); Manager of the Examiner Recruitment Team.

Key informants responded to variations on the questions in Appendix B, a semistructured interview protocol that we finalized in consultation with the International Baccalaureate research staff. To ensure compliance with U.S. federal regulations regarding the use of human subjects in research, we submitted a research plan to Inflexion's institutional review board to obtain approval before conducting research with IBEN staff and educators. After receiving explicit permission from participants, we recorded interviews to ensure accuracy in reporting. Interviews lasted 40–60 minutes. We had the data transcribed verbatim. The two research team members who conducted the interviews developed codes and a coding dictionary (see Appendix C) by triangulating interviewers' initial impressions, key findings from the literature, and relevant International Baccalaureate documents. A third research team member, who did not conduct interviews, coded the data using a focused coding process in NVivo, applying the codes to categorize findings that described IBEN-relevant inputs, contexts, processes, and outcomes that were relevant to IBEN. One of the interviewers checked the coded findings for their adherence to interview contents.

## Impact Model Formulation

Triangulating data from International Baccalaureate documents, Inflexion's literature review, and interviews with key informants from the International Baccalaureate staff, we developed an impact model that, in turn, informed the development of a survey to determine the factors that associate with successful uptake of IBEN learning. International Baccalaureate documents included

1. an IBEN report that a contracted consultant developed for International Baccalaureate in 2016
2. IBEN educator role requirements/explanations
3. IBEN's educator capabilities continuum
4. IBEN's considerations when assigning educators to visits, consultancies, and readings
5. IBEN's role descriptions for workshop leaders and school visit team members

The study's content expert produced a draft impact model based on observed commonalities across data sources, synthesizing emerging themes in how educator professional development networks in general, and IBEN in particular, feature facilitators, barriers, and outcomes. The impact model includes the typical logic model elements of inputs and activities. However, we framed the outcomes portion according to SCM parameters, considering the (a) knowledge, skills, dispositions, and actions that IBEN educators would bring to their IBEN participation; (b) the knowledge, skills, and dispositions that IBEN educators gain during their IBEN participation; (c) the critical actions of participating in IBEN; (d) the outcomes that IBEN educators receive for themselves; (e) the outcomes that IBEN educators' schools receive; and (f) IBEN's overall goals.

The principal investigator then provided feedback on the draft that prompted revision. Next, the research staff revised the model, incorporating the full research team's shared understanding of the emerging themes across data sets, particularly ensuring that no gaps existed between the revised impact model and the three data sources.

## Survey Design

Phase 1 findings informed the impact model and, in turn, the development of a 22-item survey for IBEN educators who work in authorized International Baccalaureate schools. Following Brinkerhoff (2002), we began the survey development phase "by first thinking about where it needs to end," which entails a discovery of "the right stories to tell" (p. 98). Following Dillman, Smyth, and Christian (2014), EPIC employed the Total Survey Error framework, which aims to minimize the impact of errors that stem from sampling and nonsampling factors.

Inflexion researchers developed the survey iteratively, meeting regularly with the research staff from International Baccalaureate to ensure construct validity. After final approval from International Baccalaureate, the lead author solicited an Inflexion staff member, one who had not been on the team for this study but had been a DP student during her secondary school education, to participate in an alignment process to make sure that both internal and external perspectives validated that the survey aligned to the impact model.

The survey featured pairs of items per success indicator: one item for respondents to rate their contribution(s) toward their school's implementation, attainment, and/or demonstration of a given success indicator, and a corresponding item about the time frame during which the school implemented, attained, or demonstrated the given success indicator. We used these pairs to differentiate fast success schools (i.e. those that demonstrated programmatic impact quickly or with ease) from slow success schools (i.e., those that took more time and had to overcome barriers to achieve success).

### Selection of Case Study Sites

We selected seven case study sites, sampling for maximum variation (Patton, 2002) based on schools' speed to success, strand (i.e., governance structure), region, nation, language of instruction, maturity (i.e., years since authorization), programmes offered, and programme size (i.e., number of students).

### Site Visits

Case studies included group and individual interviews with IBEN-affiliated educators (a.k.a., IBEs), heads of school, coordinators, and International Baccalaureate educators who were not affiliated with IBEN. Interview scripts, the observation protocol, and informed consent documents are in Appendix F.

### Analyses

Next, we conducted constant-comparative analysis (Goetz & LeCompte, 1981), applying magnitude coding (Saldaña, 2015) to the interview data. Codes included the components of the impact model and the impact profiles. By coding interview data from our seven case-study sites, we tested the degree to which the impact model describes the realities that IBEs experience in their schools.

## Appendix B: Key Informant Interview Protocol

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Thank you for taking the time to speak with me today. In this first phase of our research project with International Baccalaureate to conduct success case studies on the *IB Educator Network* (IBEN), we want to understand the IBEN, how it works, and its goals. During this interview, we first want to hear about how the IBEN operates. Second, we would like to learn about the skills and characteristics that the IBEN strives to foster in International Baccalaureate educators to be successful in various professional development, examination, and other IBEN roles. Third, we would like to know what signifies success for educators who participate in the IBEN, the schools in which they work, and the Network itself.

### **Do you have any questions before we begin?**

[Answer respondent's questions]

### **The following questions will ask for your informed opinions on the IBEN.**

- 1) Can you begin by explaining how the IBEN operates?

Probe/Follow-Up: For example, how are participating educators selected? How are they trained for various roles? How are they evaluated? How are they assigned to various roles, for example, as workshop leaders or examiners?

- 2) What are the purposes or goals of the IBEN?

- 3) How do you think the IBEN benefits **educators** who participate in it?

Probe/Follow-Up: Do you think all participating educators accrue these benefits? How do the participating educators who accrue these benefits differ from those who do not?

- 4) How do you think the IBEN benefits the **schools** in which the IBEN educators work?

Probe/Follow-Up: Do you think all schools of participating educators accrue these benefits? Through what processes or mechanisms do schools that accrue these benefits do so? How are the schools that accrue benefits different from the schools that do not?

- 5) What does it look like when an IBEN educator has successfully influenced the practices of colleagues in his or her school?

Probe/Follow-Up: What school-level outcomes would indicate a successful interaction with an IBEN educator and his or her school?

- 6) How does the IBEN tailor its support to cultivate the unique capacities of its educators and their schools?

Probe/Follow-Up: How is that support tailored across programmes? Regions? Public/private?  
Other contexts that reflect the diversity of International Baccalaureate schools?

7) How do you know when the IBEN has met its purposes or goals?

8) Can you think of a school that takes full advantage of the IBEN?

Probe/Follow-Up: If so, how does that school maximize its involvement with IBEN? What benefits does this school derive from doing so?

9) Due to your role as the Global Head of IBEN, may we ask for your help in gathering a few resources that will guide our process?

- A. Other than the public information on IBO.org and the recently completed report by FMP Consulting—both of which we've reviewed—are there any IBEN documents that we should be familiar with or that would be relevant to our project? Note that our goal is to understand how the IBEN functions and understand how IBEN participation benefits participating educators and their schools so we are particularly interested in documents that relate to functioning and intended outcomes.
- B. In addition to our conversation with you, we would like to interview another 5–6 International Baccalaureate staff who are involved with IBEN. We would like to hear perspectives from across the four International Baccalaureate programmes and the three International Baccalaureate regions. Can you nominate who would be the best 5–6 interviewees and let us know their job titles and locations?
- C. Using findings from this first phase of our project, we will develop a survey to identify the schools that have been particularly successful at turning their IBEN participation into school success. To keep the number of questions of that survey manageable, we wanted to know about the type of information that IBEN keeps up-to-date on its educators. For instance, would an IBEN email address also link to their school, number of years of IBEN experience, roles completed, etc.?

10) Do you have anything else to add that would help us improve our understanding of how the IBEN operates and the outcomes it is designed to produce?

Thank you very much for participating in this project. We appreciate your insights and your time.

## Appendix C: Qualitative Coding Dictionary

*Qualitative coding dictionary for interview data from International Baccalaureate staff members (n = 5) who were directly or indirectly connected to the International Baccalaureate Educator Network.*

Term	Definition
Inputs	
Induction training	Initial professional development that IBEN educator recruits receive from International Baccalaureate.
Upskilling	IBEN educators learn additional skills for depth and/or currency. (Don't double code for Train-the-Trainer and Upskilling unless both are explicitly called out.)
IBEN professional network opportunities	<p>IBEN educators participate face-to-face or via technology to interact and learn with other IBEN educators.</p> <p>Possible indicator: using IBEN Central (website).</p>
International Baccalaureate philosophy	<p>International Baccalaureate philosophy encourages a constructivist approach that esteems inquiry-based learning. (Possible indicators: International Baccalaureate mission statement, International Baccalaureate Programme Standards &amp; Practices, International Baccalaureate Learner Profile, international-mindedness.)</p> <p>International Baccalaureate Learner Profile: International Baccalaureate learners are</p> <ol style="list-style-type: none"> <li>1. Inquirers</li> <li>2. Knowledgeable</li> <li>3. Thinkers</li> <li>4. Communicators</li> <li>5. Principled</li> </ol>

Term	Definition
	<ul style="list-style-type: none"> <li>6. Open-minded</li> <li>7. Caring</li> <li>8. Risk-takers</li> <li>9. Balanced</li> <li>10. Reflective</li> </ul>
Quality assurance feedback	International Baccalaureate evaluates IBEN educators individually and provides feedback (i.e., Quality Assurance framework).
Train-the-trainer model	Practitioners demonstrate and guide other practitioners to acquire and/or develop skills and techniques. (Don't double code for Train-the-Trainer and Upskilling unless both are explicitly called out.)
Clear purpose	The network has a clear purpose, mission, and/or focus.
Human resources infrastructure	International Baccalaureate internal roles and other resources necessary to sustain the network (e.g., number of International Baccalaureate employees managing International Baccalaureate educators).
Contexts	
Prioritized IBEN roles	Workshop leaders and examiners.
Other IBEN roles	Evaluators, site visitors, all other IBEN roles.
Programmatic variety	PYP, MYP, DP, CP, Continuum (i.e., schools that run from PYP-MYP-DP whether or not they include CP, as well).
Regional variety	3 International Baccalaureate regions (Americas; Africa, Europe, Middle East; Asia-Pacific).

Term	Definition
School administrator characteristics	How school leaders or leadership teams approach organizational decision making (e.g., school staff management approach).
Funding source	Public/private school differences (terms outside the United States may include, state-run or state-funded [public] or international or independent may mean private).
School's International Baccalaureate progress	Established ("legacy" schools) v. recently authorized International Baccalaureate schools.
IBEN presence within schools	Schools with many IBEN educators vs. schools with few IBEN educators.
School socioeconomic status	Schools with high levels of resources vs. schools with low levels.
Sociohistorical impact on national education system	Historic backgrounds of countries as they pertain to valued ways of knowing (e.g., indigenous ways of knowing vs. Westernized approaches to education).
Processes	
Self-selection of IBEN applicants	Practitioners choose to become IBEN educators rather than being actively recruited by IBEN or required to become an IBEN educator by school or program administrators.
IBEN skill/alignment task	Aligning IBEN educators' skills with specific IBEN-related task(s).
Linking school to International Baccalaureate	IBEN educators serve as the main contact between their school and International Baccalaureate.

Term	Definition
Presenting to peers	IBEN educators develop the skills and confidence necessary to proficiently present information or demonstrate a practice in front of a crowd of their peers/colleagues (e.g., andragogical skills).
Systematic approach to sharing knowledge/ skill upon return	There are formal structures in place for IBEN educators to share knowledge or skills learned (e.g., school practice that educators always share out after PD, PLCs, IBEN is expected to disseminate knowledge and skills as a member of a leadership team, etc.)
Placement on school leadership teams	IBEN educators have a role on the school leadership team.
School or program collaboration	Formal structures are in place for IBEN educators to collaborate with other educators (International Baccalaureate educators and/or non-International Baccalaureate educators) within their programmes, schools, or districts.
Marketing IBEN participation	The IBEN or the school advertises the educator’s IBEN designation as a badge of teacher or school quality.
School leadership values IBEN participation	School or program executive leadership recognizes (i.e., heads of school or coordinator) and embraces the value of having one or more IBEN educators on staff.
Network collaboration	IBEN educators engage in IBEN opportunities to share best practices, ask for help when needed, and/or work with other IBEN educators on lesson plans, activities, and assessments.
Active participants	IBEN educators are active participants, not passive learners in IBEN events/opportunities.
Shared leadership	The network is flexible, allowing network members to help determine structures and/or activities at the network level.

Term	Definition
Relevancy	IBEN, as a network, addresses immediate issues that IBEN educators face, as well as longer-term issues that are most relevant to IBEN educators.
Honesty	IBEN educators believe they can be honest about the International Baccalaureate network with their peers and network leadership. They share candid feedback.
IBEN feedback to educators	IBEN provides feedback to its educators (e.g., based on workshop participant surveys).
Outcomes	
Sustained efforts	School or program practices that stem from IBEN learning are sustained, not one-offs.
Staff all required roles	International Baccalaureate has identified, trained, and/or upskilled a sufficient number of IBEN educators to be able to maintain and expand the network.
Visible implementation	IBEN learning is explicitly implemented in the school or program.
Saturation	Large and/or increasing number of IBEN educators in a given school.
Acquiring professional capital	IBEN educators become more valuable as educators through expanded skills, high-quality PD, connections to other educators, etc.
Limited between-teacher variance in student scores	Variance among student experiences and test scores shrinks as practitioners become IBEN educators and share IBEN learning, which leads to greater homogenization in student outcomes on International Baccalaureate assessments.

Term	Definition
School culture aligns with that of International Baccalaureate	Values related to international mindedness and the International Baccalaureate Learner Profile are disseminated throughout the school and become part of the school culture in tangible ways.
Staff engagement	School staff are motivated and engaged as a result of having an IBEN educator on staff.
School prestige	The school's reputation has improved as a result of having an IBEN educator on staff.
Higher exam scores	Student scores on International Baccalaureate, state-level, and/or national-level standardized assessments increase.
More emphasis on inquiry-focused learning	Inquiry-based learning is more widely taught, has become a part of the school culture, and/or school leaders emphasize the importance of inquiry-based learning.
Student engagement	Students are motivated and engaged as a result of having an IBEN educator on staff.

## Appendix D: IBEN Educator Survey

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The Phase 2 survey of IBEN educators begins on the following page.

### Informed Consent

We invite you to participate in a research project called Success Case Study of the IB Educator Network (IBEN). In this project, we expect to learn more about the benefits conferred to individuals and schools from participation in the IBEN so that the IB can make informed decisions about how best to move the program forward.

This research is being conducted by Dr. Kristine Chadwick, Ph.D. and her trained staff at the Educational Policy Improvement Center (EPIC) in Eugene, OR, USA and is funded by IB.

**What you will be asked to do:** Complete an online survey that will take 10-20 minutes. The schools of a very small number of survey respondents may be chosen for follow-up.

**Risks of participating:** There is a very small risk that confidential data will be compromised. We will minimize this risk by ensuring that only the study staff at EPIC has access to study data. We remove identifying information from the data in a timely manner, use electronic data storage methods such as password protection, and keep hard copies of documents in locked, secure offices. The information that we gather will be used only for scientific or educational purposes to improve processes for schools and outcomes for students. Your information is confidential and will not be shared or discussed with anyone outside of the approved study researchers and data collectors at EPIC, which will keep data for three years beyond the conclusion of the study and then destroy all relevant data or files. Information about participants in publications and presentations will be shared only in aggregate form so no individual will ever be identifiable. The Institutional Review Board (IRB), IntegReview, and accrediting agencies may inspect and copy your records, which may have your name on them. Therefore, absolute confidentiality cannot be guaranteed.

**Benefits:** There are several potential benefits for participation that we believe far outweigh any risks. Participating in this research might be interesting to you. Information you provide can help develop processes and resources for IB schools to improve experiences for teachers and by extension their students. Additionally, your participation will potentially benefit many other teachers and schools around the world by helping us learn more about how network approaches to professional development can improve practices in schools. Last, each participant will be entered into a raffle for three free registration fees for the available workshop of their choice (one winner for each of the three IB regions).

**Legal rights:** You will not lose any of your legal rights by signing this consent form.

**Contact information:** If you have questions about the research at any time, please contact Dr. Kristine Chadwick at +1 877.766.2279 or [kristine\\_chadwick@epiconline.org](mailto:kristine_chadwick@epiconline.org). If you do not want to talk to the investigator or study staff, if you have concerns or complaints about the research, or to ask questions about your rights as a study subject you may contact IntegReview at [integreview@integreview.com](mailto:integreview@integreview.com).

IntegReview has approved the information in this consent form and has given approval for the investigator to do the study. This does not mean IntegReview has approved your being in the study. You must consider the information in this consent form for yourself and decide if you want to be in this study.

If you agree to participate in this study, indicate so by clicking NEXT to begin the survey.

If you do not agree to participate in this study, simply close your Internet browser.

Thank you very much for participating in this survey about perspectives on the IB Educator Network. We expect the survey to require 10–15 minutes of your time. Please respond to each item as accurately and honestly as possible. Every complete survey will be entered into a lottery for you/your school to win a free International Baccalaureate (IB) registration fee for the available workshop of your choice.

When we present findings on these sections to IB, your individual responses will be combined with responses from other IB Educator Network members to protect all respondents' identities.

\* Please provide us with the email address that you use for your IBEN Central profile.

If you believe that you provided IBEN Central with an alternative email address, please list that address also.

Reasons for Joining

\* I became a member of the IB Educator Network in

\* Prior to joining the IB Educator Network, I had worked in IB schools for

\* Prior to joining the IB Educator Network, I had been an educator for

\* Which of the following statements best describes your ***main reason*** for joining the IB Educator Network:

I joined the IB Educator Network because...

- one of my colleagues had joined the IB Educator Network and then recommended that I join.
- I wanted to deepen my knowledge and skills as an IB educator.
- IB Educator Network membership makes me more desirable to employers.
- my coordinator and/or head of school encouraged me to join.
- I wanted to support the IB mission.
- I wanted to earn additional income.
- Other:

Connection

\* Since joining the IB Educator Network, I have served as a

How often?

Workshop leader

Examiner

Programme field representative or session observer

School visit team member or leader

School consultant

Other: Please specify below

Other:

\* At my current school,

- I am the only educator who is a member of the IB Educator Network.
- I am among 2–5 educators who have joined the IB Educator Network.
- I am among 6–10 educators who have joined the IB Educator Network.
- I am among more than 10 educators who have joined the IB Educator Network.
- I no longer work at an IB school.

Successful Participation

\* My school advertises IBEN participation to signal our school's level of quality and/or to aid our staff recruitment efforts.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but we plan to
- We have no plans to do this

Successful Participation

\* My IBEN participation has helped my school develop processes or systems to share what I have learned from my IBEN experiences.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* As a result of my IBEN participation, I have helped my school align its culture to IB philosophy (such as through greater emphasis on the IB mission, international-mindedness, and/or the Learner Profile).

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* My IBEN participation helped my school to more closely align its culture to emphasize IB philosophy...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* My IBEN participation has led me to help colleagues in my school improve in areas that will contribute to higher IB exam scores.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* My IBEN participation has led me to help colleagues in my school improve in areas that will contribute to higher IB exam scores...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* My IBEN participation led me to encourage one or more of my colleagues to join the IB Educator Network.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* I first encouraged one or more of my colleagues to join the IB Educator Network...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* As a result of my IBEN participation, I have both expanded my skillset in leading adult learning and employed those skills in my school.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* I employed at my school an expanded skillset in leading adult learning...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* My collaborations with other IBEN members have deepened my school's ability and/or willingness to engage with other IB schools.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* My school's ability and/or willingness to engage with IB schools deepened...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* My IBEN participation has helped me deepen programmatic knowledge at my school.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* My IBEN participation helped my school deepen programmatic knowledge...

- within 6 months of me becoming a member of the IB Educator Network
- about a year after I became a member of the IB Educator Network
- more than a year after I became a member of the IB Educator Network

Successful Participation

\* As a result of my IBEN participation, I have helped my school improve its implementation of instructional approaches (e.g., for specific subjects or more generally) that are appropriate to the IB programme(s) that my school offers.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* My IBEN participation helped to improve my school's implementation of programme-appropriate instructional approaches (either in quality or frequency)...

- within 6 months of learning those programme-appropriate instructional approaches through IB Educator Network participation
- about a year after learning those programme-appropriate instructional approaches through IB Educator Network participation
- more than a year after learning those programme-appropriate instructional approaches through IB Educator Network participation

Successful Participation

\* As a result of acquiring subject-specific knowledge through my IBEN experiences, I shared that knowledge with school colleagues.

- Yes, with clearly positive results
- Yes, but we haven't witnessed any discernible results yet
- Not yet, but I plan to
- I have no plans to do this

Successful Participation

\* I shared enhanced subject-specific knowledge with school colleagues...

- within 6 months of me acquiring that subject-specific knowledge through IB Educator Network participation
- about a year after I acquired that subject-specific knowledge through IB Educator Network participation
- more than a year after I acquired that subject-specific knowledge through IB Educator Network participation

Successful Participation

\* To what extent has your participation in IBEN made a major positive impact on your school?

- Very low
- Low
- Medium
- High
- Very high

Open-Ended Items

**These questions are very important to aid our understanding about how the IB Educator Network helps its educators and their schools realize success. Please take your time in responding to them.**

\* In addition to/instead of the outcomes listed in previous items, what other ways has the IB Educator Network been a source of your *own professional development*?

Please provide as many specific examples as you can recall.

\* In addition to/instead of the outcomes listed in previous items, what other ways has the IB Educator Network been a source of *improvement at your school*?

Please provide as many specific examples as you can recall.

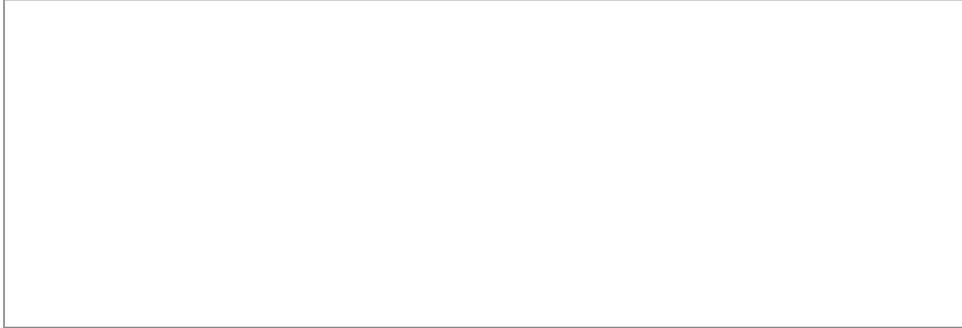
Open-Ended Items

\* Does your school have systems or processes in place that enable it to maximize the benefits from participating in the IB Educator Network?

- No
- Yes

Open-Ended Items

\* Describe your schools' systems or processes that enable it to maximize the benefits from participating in the IB Educator Network.

A large, empty rectangular box with a thin black border, intended for the respondent to provide their answer to the question above.

Demographics

\* My school is located in

\* My IB school offers the following IB programme(s). Please check all that apply to your school:

- Primary Years Programme
- Middle Years Programme
- Diploma Programme
- Career-Related Programme

## Appendix E: Informed Consent

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This appendix includes three documents that encompass the informed consent process. Document 1 is an invitation for IBEN educators to participate in the survey. Document 2 is the informed consent procedure that will serve as Page 1 of the actual survey. Document 3 is a reminder for heads of school and coordinators to encourage the IBEN educators in their school to participate in the survey.

### Survey Invitation



Dear International Baccalaureate Educator Network member:

We invite you to participate in a research project called *Success Case Study of the IB Educator Network* (IBEN). If you participate, you can

- help us learn how IBEN actually works
- show International Baccalaureate how IBEN educators can benefit from participating
- enter for a chance to win one free registration for an available International Baccalaureate workshop of your choice

International Baccalaureate is donating one free workshop registration because it values and wants to hear your experiences and insights about how you have used what you have learned during your time participating in IBEN.

If you are interested in participating, here's how it will work:

1. Check the inbox in the email you use for communicating with IBEN for an email from the Educational Policy Improvement Center (EPIC) in Eugene, OR, USA, in the next few days.
2. In the email, you will find a link for a survey that will take 10–20 minutes.
3. Complete the survey as accurately and honestly as possible.
4. Your email address will be entered into a lottery for a free workshop registration. There will be one lottery winner in each International Baccalaureate region.
5. EPIC might contact your school to follow up with more in-depth, school-level data collection.

Please email [michael\\_thier@epiconline.org](mailto:michael_thier@epiconline.org) if you have any questions about the survey or this process.

Thank you for considering participation,

Marjorie Lope  
Global Head, IBEN

International Baccalaureate Organisation

Dr. Bradley Shrimpton  
Global Research Manager

International Baccalaureate Organisation

## Informed Consent Procedure



[Page 1 of the survey instrument]

We invite you to participate in a research project called *Success Case Study of the IB Educator Network* (IBEN). In this project, we expect to learn more about the benefits conferred to individuals and schools from participation in the IBEN so that the IB can make informed decisions about how best to move the program forward.

This research is being conducted by Dr. Kristine Chadwick and her staff at the Educational Policy Improvement Center (EPIC) in Eugene, OR, USA, and is funded by IB.

**What you will be asked to do:** Complete an online survey that will take 10–20 minutes. Surveys from a very small number of schools may identify those schools for a possible follow-up case study if the schools are interested in participating further.

**Risks of participating:** There is a very small risk that confidential data will be compromised. We will minimize this risk by ensuring that only the study staff at EPIC has access to study data. We remove identifying information from the data in a timely manner, use electronic data storage methods such as password protection, and keep hard copies of documents in locked, secure offices. The information that we gather will be used only for scientific or educational purposes to improve processes for schools and outcomes for students. Your information is confidential and will not be shared or discussed with anyone outside of the approved study researchers and data collectors at EPIC, which will keep data for three years beyond the conclusion of the study and then destroy all relevant data or files. Information about participants in publications and presentations will be shared only in aggregate form so that no individual will ever be identifiable. The Institutional Review Board, IntegReview, and accrediting agencies may inspect and copy your records, which may have your name on them. Therefore, absolute confidentiality cannot be guaranteed.

**Benefits:** There are several potential benefits for participation that we believe far outweigh any risks. Participating in this research might be interesting to you. Information you provide can help develop processes and resources for International Baccalaureate schools to improve experiences for teachers and by extension their students. Additionally, your participation will potentially benefit many other teachers and schools around the world by helping us learn more about how network approaches to professional development can improve practices in schools. Last, each participant will be entered into a raffle for three free registration fees for the available workshop of their choice (one winner for each of the three International Baccalaureate regions).

**Legal rights:** You will not lose any of your legal rights by signing this consent form.

**Contact information:** If you have questions about the research at any time, please contact Dr. Kristine Chadwick at +1 877.766.2279 or [kristine\\_chadwick@epiconline.org](mailto:kristine_chadwick@epiconline.org). If you do not want to talk to the investigator or study staff, if you have concerns or complaints about the research, or to ask questions about your rights as a study subject, you may contact IntegReview at [integreview@integreview.com](mailto:integreview@integreview.com).

IntegReview has approved the information in this consent form and has given approval for the investigator to do the study. This does not mean that IntegReview has approved your being in the study. You must consider the information in this consent form for yourself and decide if you want to be in this study.

If you agree to participate in this study, indicate so by clicking NEXT to begin the survey. If you do not agree to participate in this study, simply close your Internet browser.

## Survey Invitation Reminder



Dear Head of School/Coordinator:

About a week ago, we emailed one of your school's educators who is also a member of the International Baccalaureate Educator Network (IBEN). We asked that educator to complete a survey that would

- help us learn how IBEN actually works
- show International Baccalaureate how IBEN members can benefit from participating
- enable the educator a chance to win a free registration for an available International Baccalaureate workshop of their choice

Please encourage that educator to complete the survey so we can include your school's perspective into our research project: *Success Case Study of the IB Educator Network (IBEN)*. Participation can increase the benefits that schools derive from having their educators join IBEN and might produce a free workshop registration.

Please email [michael\\_thier@epiconline.org](mailto:michael_thier@epiconline.org) if you have any questions about the survey or this process.

Thank you for helping us ensure that all schools with IBEN members are represented in this project.

Best wishes,

Marjorie Lope  
Global Head, IBEN  
International Baccalaureate Organisation

Dr. Bradley Shrimpton  
Global Research Manager  
International Baccalaureate Organisation

## Appendix F: Site Visit Protocols

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This section includes 6 documents including interview scripts, the observation protocol, and informed consent documents.

### Interview Script: Head of School

Thank you for speaking with me today. As you may know, I am a researcher with the Educational Policy Improvement Center, known as EPIC. International Baccalaureate (IB) contracted EPIC to study the IB Educator Network (IBEN). We want to learn what IBEN educators and their schools do to generate successful outcomes by participating in the network.

In this interview, I would like to hear about your experiences with IBEN educators bringing learning from IBEN network assignments back to [NAME OF SCHOOL]. As I noted during the informed consent process I conducted, I will audio record this discussion to ensure that I accurately capture the information you share with me. Later on, without identifying you by name or the name of your school, EPIC will combine information from this interview with others at [NAME OF SCHOOL] and other IB schools. Ultimately, we will report back to IB about what IBEN educators and their schools do to maximize successful outcomes of IBEN participation.

Do you have any questions before we begin? [Answer respondent's questions]

Thank you. I will begin recording now.

This is [RESEARCHER'S NAME] speaking with the head of school at [NAME OF SCHOOL] on [DAY, MONTH, YEAR]. Thank you again for speaking with me today.

1. *Are you a member of the IB Educator Network?* IF NO, PROCEED TO QUESTION No. 2. IF YES, ASK Nos. 1A AND 1B BEFORE PROCEEDING TO No. 2.

1a. Let's start by having you please describe the IBEN roles with which you have been involved while you have worked at this school and provide a sense of how often you fulfill each of those roles.

1b. As specifically as possible, if your IBEN participation has been a source of your own professional development, please share the ways in which it has helped you grow.

Probe if not mentioned previously: How, if at all, has IBEN participation helped you with

- your confidence as a professional?
  - developing or deepening collaborative skills?
  - invigorating or energizing you?
2. If you were interacting with other IB school heads, how might you briefly describe to them the impact that IBEN participation has had on your school?
  3. [You've named a few outcomes, but I'd like to probe a bit further about outcomes.] What are some successful outcomes that your school has enjoyed that you attribute to the IBEN participation of one or more members of your faculty?

Probe if the following topics are not mentioned explicitly:

- In what ways, if any, has the IB Educator Network been a source of improvement in your school's functioning, climate, IB assessment scores, or other indicators of student achievement?
  - To what extent do your staff engage more deeply in IB-specific pedagogical practices or in a wider array of IB-specific pedagogical practices due to the IBEN participation of one or more members of your faculty?
4. Regarding the following topics, please provide examples of how IBEN participation has helped you **AND** about how long in months or years you were able to help your colleagues here at [NAME OF SCHOOL] implement these changes based on your IBEN-related learning or experiences:
- Student-centered learning strategies or pedagogy
  - Resources or materials to be used programme-wide, not just for a single discipline or subject
  - Instructional approaches pertinent to improving performance on IB assessments or other indicators of student achievement
  - Aligning school culture with the IB mission or philosophy, international mindedness, the Learner Profile, or the Standards & Practices so that school practices tangibly demonstrate those aspects of IB education
  - Encouraging additional faculty to become IBEN educators
5. As specifically as possible, please describe ways in which your school's IBEN educators have served as links between your school and International Baccalaureate?

Now let's talk about school-level systems and processes that may influence the effects of your school's IBEN participation.

6. What systems, policies, or processes do you employ in your school to maximize the benefits from the IBEN participation of one or more members of your faculty?
7. How, if at all, do you involve IBEN educators into school leadership activities?
8. How, if at all, does your school advertise or market that some of its educators are members of the IBEN network?
9. Besides topics or ideas we've already discussed, what additional resources or supports have contributed to your school's ability to maximize the benefits from the IBEN participation of one or more members of your faculty?
10. Are there any resources or supports that you have needed and not had that would have made IBEN participation more successful for your school?

**ONLY FOR HEADS OF SCHOOL WHO ARE ALSO IBENS:**

- 11a. What strategies, if any, have you found for effective networking with other IBEN educators?
- 11b. What role, if any, do your IBEN experiences play in how you characterize yourself as a high-quality educator?

***OTHERWISE, CONTINUE TO NO. 12***

12. I have no more direct questions for you, so I wanted to give you an opportunity to discuss any other ideas, suggestions, or lessons learned regarding faculty IBEN participation and how it has contributed toward your school.

Thank you for your time.

## Interview Script: Coordinators

Thank you for speaking with me today. As you may know, I am a researcher with the Educational Policy Improvement Center, known as EPIC. International Baccalaureate (IB) contracted EPIC to study the IB Educator Network (IBEN). We want to learn what IBEN educators and their schools do to generate successful outcomes by participating in the network.

In this interview, I would like to hear about your experiences with IBEN educators bringing learning from IBEN network assignments back to [NAME OF SCHOOL]. As I noted during the informed consent process I conducted, I will audio record this discussion to ensure that I accurately capture the information you share with me. Later on, without identifying you by name or the name of your school, EPIC will combine information from this interview with others at [NAME OF SCHOOL] and other IB schools. Ultimately, we will report back to IB about what IBEN educators and their schools do to maximize successful outcomes of IBEN participation.

Do you have any questions before we begin? [Answer respondent's questions]

Thank you. I will begin recording now.

This is [RESEARCHER'S NAME] speaking with the IB coordinator at [NAME OF SCHOOL] on [DAY, MONTH, YEAR]. Thank you again for speaking with me today.

1. Are you a member of the IB Educator Network? IF NO, PROCEED TO QUESTION No. 2. IF YES, ASK Nos. 1A AND 1B BEFORE PROCEEDING TO No. 2.

1a. Let's start by having you please describe the IBEN roles with which you have been involved while you have worked at this school and provide a sense of how often you fulfill each of those roles.

1b. As specifically as possible, if your IBEN participation has been a source of your own professional development, please share the ways in which it has helped you grow.

Probe if not mentioned previously: How, if at all, has IBEN participation helped you with

- your confidence as a professional?
  - developing or deepening collaborative skills?
  - invigorating or energizing you?
2. If you were interacting with other IB coordinators, how might you briefly describe to them the impact that IBEN participation has had on your school?
  3. [You've named a few outcomes, but I'd like to probe a bit further about outcomes.] What are some successful outcomes that your school has enjoyed that you attribute to the IBEN participation of one or more members of your faculty?

Probe if the following topics are not mentioned explicitly:

- In what ways, if any, has the IB Educator Network been a source of improvement in your school's functioning, climate, IB assessment scores, or other indicators of student achievement?
  - To what extent do your staff engage more deeply in IB-specific pedagogical practices or in a wider array of IB-specific pedagogical practices due to the IBEN participation of one or more members of your faculty?
4. Regarding the following topics, please provide examples of how IBEN participation has helped you **AND** about how long in months or years you were able to help your colleagues here at [NAME OF SCHOOL] implement these changes based on your IBEN-related learning or experiences:
- Resources or materials specific to a discipline or subject
  - Resources or materials to be used programme-wide, not just for a single discipline or subject
  - Instructional approaches pertinent to improving performance on IB assessments or other indicators of student achievement
  - Student-centered learning strategies or pedagogy
  - Aligning school culture with the IB mission or philosophy, international mindedness, the Learner Profile, or the Standards & Practices so that school practices tangibly demonstrate those aspects of IB education
  - Encouraging additional faculty to become IBEN educators
  - Having less variation in student scores on IB exams among teachers of the same subject [IF applicable to this school]
  - Interacting with IB schools elsewhere in the country, region, or world
5. Can you provide any examples in which you observed any of your school's IBEN educators demonstrating increased abilities in their abilities to facilitate adult learning (i.e., andragogy) that you might attribute to their IBEN participation?
6. As specifically as possible, please describe ways in which your school's IBEN educators have served as links between your school and International Baccalaureate?

Now let's talk about school-level systems and processes that may influence the effects of your school's IBEN participation.

7. What systems, policies, or processes do you employ in your school to maximize the benefits from the IBEN participation of one or more members of your faculty?
8. Besides topics or ideas we've already discussed, what additional resources or supports have contributed to your school's ability to maximize the benefits from the IBEN participation of one or more members of your faculty? Are there any resources or supports that you have needed and not had that would have made IBEN participation more successful for your school?

9. What does your school do to ensure that your IBEN educators sustain their engagement with the network rather than involve themselves in one-off or isolated experiences?
10. You have described various ways that your school and its IBEN educators involve themselves with the network, how might your involvement be different if your school was composed differently? For example, what if your school
- was recently authorized to offer IB rather than a more established school
  - had many more or fewer IBEN educators on site
  - offered the \_\_\_\_\_ [PYP, MYP, DP] \_\_\_\_\_ instead of the programme(s) that you offer currently?
  - had significantly [fewer or more, depending on how well-resourced school is now] financial resources
11. We can skip this next question if you don't feel you have enough information to imagine how certain contexts might alter a school's involvement with the IB Educator Network. That said, how might your IB Educator Network involvement change if your school
- was in a different community, nation, or region
  - was [public or private] rather than [what the school is]

**ONLY FOR COORDINATORS WHO ARE ALSO IBENS:**

- 12a. What strategies, if any, have you found for effective networking with other IBEN educators?
- 12b. What role, if any, do your IBEN experiences play in how you characterize yourself as a high-quality educator?

**OTHERWISE, CONTINUE TO NO. 13**

13. I have no more direct questions for you, so I wanted to give you an opportunity to discuss any other ideas, suggestions, or lessons learned regarding faculty IBEN participation and how it has contributed toward your school.

Thank you for your time.

## Interview/Focus Group Script: IBEN Educator (IBE)

Thank you for speaking with me today. As you may know, I am a researcher with the Educational Policy Improvement Center, known as EPIC. International Baccalaureate (IB) contracted EPIC to study the IB Educator Network (IBEN), of which you are a member. We want to learn what IBEN educators and their schools do to generate successful outcomes by participating in the network.

In this interview/focus group, I would like to hear about your experiences with the IBEN network and what it is like to bring those experiences back to [NAME OF SCHOOL]. As I noted during the informed consent process I conducted, I will audio record this discussion to ensure that I accurately capture the information you share with me. Later on, without identifying you by name or the name of your school, EPIC will combine information from this interview/focus group with others at [NAME OF SCHOOL] and other IB schools. Ultimately, we will report back to IB about what IBEN educators and their schools do to maximize successful outcomes of IBEN participation.

Do you/does anyone have any questions before we begin? [Answer respondents' questions]

Thank you. I will begin recording now.

This is [RESEARCHER'S NAME] speaking with IBEN educator[s] on [DAY, MONTH, YEAR] at [NAME OF SCHOOL]. Thank you again for speaking with me today.

1. Let's start by having you please describe the IBEN roles with which you have been involved while you have worked at this school and provide a sense of how often you fulfill each of those roles.
2. As specifically as possible, if your IBEN participation has been a source of your own professional development, please share the ways in which it has helped you grow.

Probe if not mentioned previously: How, if at all, has IBEN participation helped you with

- your confidence as a professional?
  - developing or deepening collaborative skills?
  - invigorating or energizing you?
3. [You've named a few outcomes, but I'd like to probe a bit further about outcomes.] What are some successful outcomes that your school has enjoyed that you attribute to the IBEN participation of one or more members of your faculty?

Probe if the following topics are not mentioned explicitly:

- In what ways, if any, has the IB Educator Network been a source of improvement in your school's functioning, climate, IB assessment scores, or other indicators of student achievement?
  - To what extent do your staff engage more deeply in IB-specific pedagogical practices or in a wider array of IB-specific pedagogical practices due to the IBEN participation of one or more members of your faculty?
4. Regarding the following topics, please provide examples of how IBEN participation has helped you **AND** about how long in months or years you were able to help your colleagues here at

[NAME OF SCHOOL] implement these changes based on your IBEN-related learning or experiences:

- Resources or materials specific to a discipline or subject
- Resources or materials to be used programme-wide, not just for a single discipline or subject
- Instructional approaches pertinent to improving performance on IB assessments or other indicators of student achievement
- Aligning school culture with the IB mission or philosophy, international mindedness, the Learner Profile, or the Standards & Practices so that school practices tangibly demonstrate those aspects of IB education
- Other ways?

Let's now spend a little time talking about school-level structures and processes that may have an effect on the impact of your IBEN experiences.

5. What does your school do well in terms of policies, systems, or processes that help you share with your colleagues here at [NAME OF SCHOOL] what you learn during IBEN experiences?
6. By contrast, how can your school improve its policies, systems, or processes to better enable you to share with your colleagues here at [NAME OF SCHOOL] what you learn during IBEN experiences?
7. Let's turn to how leaders here at [NAME OF SCHOOL] view and incorporate the work of IBEN educators.
  - To what extent do you feel that your school's leader(s) value IBEN participation?

Probe if not mentioned previously:

- How, if at all, do your school's leaders involve IBEN educators in planning or decision making regarding the IB programme(s) here at [NAME OF SCHOOL]?
- What policies or practices, if any, do your school's leaders follow to ensure that IBEN educators can say 'Yes' to the assignments that the network offers them?

Now let's turn to the IBEN network.

8. What role, if any, does feedback from the IBEN network (i.e., the workshop participant survey or informal feedback from workshop attendees or other IB educators) play in your reflection upon your practice as an IBEN educator or an educator overall?

Probe if not mentioned previously:

- Do you share your IBEN feedback with your school leaders?

9. What strategies, if any, have you found for effective networking with other IBEN educators at IBEN events?
10. Finally, I'd like to ask what role, if any, do your IBEN experiences play in how you characterize yourself as a high-quality educator?

11. I have no more direct questions for you, so I wanted to give you an opportunity to discuss any other ideas, suggestions, or lessons learned regarding your IBEN participation' and how it has contributed toward you and/or your school.

Thank you for your time.

## Interview Script: IB teachers who are not IBEN educators

Thank you for speaking with me today. As you may know, I am a researcher with the Educational Policy Improvement Center, known as EPIC. International Baccalaureate (IB) contracted EPIC to study the IB Educator Network (IBEN), of which some of your colleagues at [NAME OF SCHOOL] are members. We want to learn what IBEN educators and their schools do to generate successful outcomes by participating in the network.

In this focus group, I would like to hear about your experiences with IBEN educators bringing learning from IBEN network assignments back to [NAME OF SCHOOL]. As I noted during the informed consent process I conducted, I will audio record this discussion to ensure that I accurately capture the information you share with me. Later on, without identifying you by name or the name of your school, EPIC will combine information from this focus group with others at [NAME OF SCHOOL] and other IB schools. Ultimately, we will report back to IB about what IBEN educators and their schools do to maximize successful outcomes of IBEN participation.

Do you have any questions before we begin? [Answer respondents' questions]

This is [RESEARCHER'S NAME] speaking with educators at [NAME OF SCHOOL] on [DAY, MONTH, YEAR]. Thank you again for speaking with me today.

### 1. What do you know about the IB Educator Network?

Probe if no colleagues are named:

- Do you know which of your colleagues at [NAME OF SCHOOL] are members of the IB Educator Network?

### 2. The IB Educator Network expects its members to share their knowledge, skills, and experiences with their school-based colleagues. Hearing that, in what ways, if at all, have you observed that your colleagues' participation in the IB Educator Network has had positive effects on [NAME OF SCHOOL]?

### 3. Can you describe how IBEN educators at [NAME OF SCHOOL] have helped you engage more deeply in instructional approaches that can help improve student performance on IB assessments or other indicators of student achievement or in developing your student-centered learning strategies?

### 4. In addition to anything you've mentioned so far, please provide examples of how your colleagues' IBEN participation has helped you, your colleagues, or your school implement beneficial changes in any of the following areas:

[Use bullets as probes to expand on or add to what has already been stated in responses to first few questions]

- Resources or materials specific to a discipline or subject
- Resources or materials to be used programme-wide, not just for a single discipline or subject

- Aligning school culture with the IB mission or philosophy, international mindedness, the Learner Profile, or the Standards & Practices so that school practices tangibly demonstrate those aspects of IB education
  - Encouraging additional faculty to become IBEN educators
  - Interacting with IB schools elsewhere in the country, region, or world
5. I have no more direct questions for you, so I wanted to give you an opportunity to discuss any other ideas, suggestions, or lessons learned regarding faculty IBEN participation and how it has contributed toward your school.

Thank you for your time.

Ethnographic Observation Tool  
IB Educator Network School Observation Protocol

Researcher: \_\_\_\_\_

Date: \_\_\_\_\_

School: \_\_\_\_\_

Walk-Through Host(s)/ Meeting Leader(s): \_\_\_\_\_

Observation Type:

- Walk-Through
- Collaborative planning; Type (Whole school, grade-level, subject area, other division)  
\_\_\_\_\_
- Leadership team meeting

Pre-Observation Notes (If applicable):

Impact model category	Finding(s)	Evidence	Note(s)
Gained knowledge, skills, and/or dispositions			
Impact model category	Finding(s)	Evidence	Note(s)
Critical actions of IBEN educators			

Impact model category	Finding(s)	Evidence	Note(s)
IBEN educator outcome			
Impact model category	Finding(s)	Evidence	Note(s)
School-level outcome			

Impact model category	Finding(s)	Evidence	Note(s)
Network-level outcome			

## Informed Consent: School Leader



Hello, Educator at \_\_\_\_\_,

We invite you to participate in a research project called *Success Case Study of the IB Educator Network* (IBEN). In this project, we expect to learn more about the benefits conferred to individuals and schools from participation in the IBEN so that International Baccalaureate (IB) can make informed decisions about how best to move the program forward.

This research is being conducted by Dr. Kristine Chadwick, PhD. and her trained staff at the Educational Policy Improvement Center (EPIC) in Eugene, OR, USA. IB is funding this research.

**What you will be asked to do:** If you agree to participate in this study, we will ask for your permission as a school leader to allow our researcher(s) to engage in nonparticipant observation of your school during its regular day occurrences. Researchers may ask you or your designees for artifacts that indicate elements of the school culture that support success indicator(s). We also ask for your permission to conduct building walk-throughs to note engagement and general comporment. Last, EPIC researchers would request to photograph the premises without enabling any individual's likeness to be recognizable.

**Risks of participating:** There is a very small risk that confidential data will be compromised. We will minimize this risk by ensuring that only research staff at EPIC who work on this study have access to study data. We remove identifying information from data in a timely manner, use electronic data storage methods such as password protection, and keep any hard copies of documents in locked, secure offices. The information we gather will be used only for scientific or educational purposes to improve processes for schools and outcomes for students. Your school's information is confidential and will not be shared or discussed with anyone outside of the approved study researchers and data collectors at EPIC, which will keep data for three years beyond the conclusion of the study and then destroy all relevant data or files. Information about schools in publications and presentations will be shared only in aggregate form so no individual will ever be identifiable.

The Institutional Review Board (IRB), IntegReview, and accrediting agencies may inspect and copy your records, which may have your school's name on them. Therefore, absolute confidentiality cannot be guaranteed. Additionally, because you are a part of a small number of educators at your school, your colleagues or other members of your school community might know or learn that you are taking part in this study. If you do not want others to know that you are involved in this study, you can help protect your privacy by not telling anyone. However, EPIC cannot guarantee absolute confidentiality of the information disclosed.

**Benefits:** There are several potential benefits for participation that we believe far outweigh any risks. Participating in this research might be interesting to you. Information you provide can help develop processes and resources for IB schools to improve experiences for teachers and by extension their students. Additionally, your participation will potentially benefit many other teachers and schools around the world by helping us learn more about how network approaches to professional development can improve practices in schools.

**Legal rights:** You will not lose any of your legal rights by signing this consent form.

**How long the study will last:** The study will occur in several phases, ultimately lasting until October 2018. The first two phases have already been completed. Your participation in Phase III would include only 30–60 minute interviews or focus groups conducted during January or February 2018.

**Payment for being in the study:** There is no payment for participants in this study.

**CONTACT INFORMATION**

If you have questions about the research at any time, please contact Dr. Kristine Chadwick at 877.766.2279 or [kristine\\_chadwick@epiconline.org](mailto:kristine_chadwick@epiconline.org).

If you do not want to talk to the investigator or study staff, if you have concerns or complaints about the research, or to ask questions about your rights as a study subject you may contact IntegReview. IntegReview’s policy indicates that all concerns/complaints are to be submitted in writing for review at a convened IRB meeting to:

<b>Mailing Address:</b>	<b>OR</b>	<b>Email Address:</b>
Chairperson IntegReview IRB 3815 S. Capital of Texas Highway Suite 320 Austin, Texas 78704		<a href="mailto:integreview@integreview.com">integreview@integreview.com</a>

If you are unable to provide your concerns/complaints in writing or if this is an emergency situation regarding subject safety, contact the IntegReview office at:

512-326-3001 or  
toll free at 1-877-562-1589  
between 8 a.m. and 5 p.m. Central Time

IntegReview has approved the information in this consent form and has given approval for the investigator to do the study. This does not mean IntegReview has approved your being in the study. You must consider the information in this consent form for yourself and decide if you want to be in this study.

**ALTERNATIVES TO PARTICIPATING IN THE STUDY**

Since this study is for research only, the only other choice would be to decline to participate in the study.

**Your Right to Withdraw from the Project**

Your participation in the study is entirely voluntary and your decision about whether or not to participate will involve no penalty or loss of benefits you might otherwise receive. If you decide to participate, you can stop participating at any time without penalty. You have the right to refuse participation in the study. If you decide not to participate in the study or if you later decide to opt out of participation at any time you will not be penalized for doing so in any way (e.g. from your administrator or through any district evaluation). Participation or nonparticipation in the study will not affect your pay, your evaluations, or your status with your school, governing body, or International Baccalaureate.

IBEN Success Case Study Final Report

If you **DO** want to participate in the study, please sign this form. A copy of the form and the information packet/protocol will be given to you for you to keep for reference.

I have read this and I agree to participate in the study.

Print name: \_\_\_\_\_

Professional title: \_\_\_\_\_

Signature: \_\_\_\_\_

School: \_\_\_\_\_

Date: \_\_\_\_\_

We appreciate you taking the time to consider being a part of the *Success Case Study of the IB Educator Network* project.

Printed Name of Person Explaining Consent Form: \_\_\_\_\_

Signature of Person Explaining Consent Form: \_\_\_\_\_

Investigator: Dr. Kristine Chadwick, Educational Policy Improvement Center, Senior Director of Programs

Date: \_\_\_\_\_

## Informed Consent: Educator



Hello, Educator at \_\_\_\_\_,

We invite you to participate in a research project called *Success Case Study of the IB Educator Network* (IBEN). In this project, we expect to learn more about the benefits conferred to individuals and schools from participation in the IBEN so that International Baccalaureate (IB) can make informed decisions about how best to move the program forward.

This research is being conducted by Dr. Kristine Chadwick, PhD. and her trained staff at the Educational Policy Improvement Center (EPIC) in Eugene, OR, USA. IB is funding this research.

**What you will be asked to do:** If you agree to participate in this study, you will be invited for an individual interview and/or focus group interview, each of which would be 30–60 minutes long. Any interview and/or focus group you are asked to participate in would occur at the school site where you work and during typical school hours. We would schedule your participation in consultation with your coordinator and/or school administrator to ensure minimal invasion of your workday. Participation would require that you permit researchers to take notes and record the conversation with an audio device. Later, we would have responses transcribed to memorialize what participants said.

**Risks of participating:** There is a very small risk that confidential data will be compromised. We will minimize this risk by ensuring that only research staff at EPIC who work on this study have access to study data. We remove identifying information from data in a timely manner, use electronic data storage methods such as password protection, and keep any hard copies of documents in locked, secure offices. The information we gather will be used only for scientific or educational purposes to improve processes for schools and outcomes for students. Your information is confidential and will not be shared or discussed with anyone outside of the approved study researchers and data collectors at EPIC, which will keep data for three years beyond the conclusion of the study and then destroy all relevant data or files. Information about participants in publications and presentations will be shared only in aggregate form so no individual will ever be identifiable.

The Institutional Review Board (IRB), IntegReview, and accrediting agencies may inspect and copy your records, which may have your name on them. Therefore, absolute confidentiality cannot be guaranteed. Additionally, because you are a part of a small number of educators at your school, your colleagues or other members of your school community might know or learn that you are taking part in this study. If you do not want others to know that you are involved in this study, you can help protect your privacy by not telling anyone. However, EPIC cannot guarantee absolute confidentiality of the information disclosed, especially among focus group participants, due to the nature of group participation. It is possible that other focus group members could disclose the information discussed during the focus group.

**Benefits:** There are several potential benefits for participation that we believe far outweigh any risks. Participating in this research might be interesting to you. Information you provide can help develop processes and resources for IB schools to improve experiences for teachers and by extension their students. Additionally, your participation will potentially benefit many other teachers and schools around the world by helping us learn more about how network approaches to professional development can improve practices in schools.

**Legal rights:** You will not lose any of your legal rights by signing this consent form.

**How long the study will last:** The study will occur in several phases, ultimately lasting until October 2018. The first two phases have already been completed. Your participation in Phase III would include only 30–60 minute interviews or focus groups conducted during January or February 2018.

**Payment for being in the study:** There is no payment for participants in this study.

### **CONTACT INFORMATION**

If you have questions about the research at any time, please contact Dr. Kristine Chadwick at 877.766.2279 or [kristine\\_chadwick@epiconline.org](mailto:kristine_chadwick@epiconline.org).

If you do not want to talk to the investigator or study staff, if you have concerns or complaints about the research, or to ask questions about your rights as a study subject you may contact IntegReview. IntegReview's policy indicates that all concerns/complaints are to be submitted in writing for review at a convened IRB meeting to:

<b>Mailing Address:</b>	<b>OR</b>	<b>Email Address:</b>
Chairperson IntegReview IRB 3815 S. Capital of Texas Highway Suite 320 Austin, Texas 78704		<a href="mailto:integreview@integreview.com">integreview@integreview.com</a>

If you are unable to provide your concerns/complaints in writing or if this is an emergency situation regarding subject safety, contact the IntegReview office at:

512-326-3001 or  
toll free at 1-877-562-1589  
between 8 a.m. and 5 p.m. Central Time

IntegReview has approved the information in this consent form and has given approval for the investigator to do the study. This does not mean IntegReview has approved your being in the study. You must consider the information in this consent form for yourself and decide if you want to be in this study.

### **ALTERNATIVES TO PARTICIPATING IN THE STUDY**

Since this study is for research only, the only other choice would be to decline to participate in the study.

#### **Your Right to Withdraw from the Project**

Your participation in the study is entirely voluntary and your decision about whether or not to participate will involve no penalty or loss of benefits you might otherwise receive. If you decide to participate, you can stop participating at any time without penalty. You have the right to refuse participation in the study. If you decide not to participate in the study or if you later decide to opt out of participation at any time you will not be penalized for doing so in any way (e.g. from your administrator or through any district evaluation). Participation or nonparticipation in the study will not affect your pay, your evaluations, or your status with your school, governing body, or International Baccalaureate.

IBEN Success Case Study Final Report

If you **DO** want to participate in the study, please sign this form. A copy of the form and the information packet/protocol will be given to you for you to keep for reference.

I have read this and I agree to participate in the study.

Print name: \_\_\_\_\_

Signature: \_\_\_\_\_

School: \_\_\_\_\_

Date: \_\_\_\_\_

We appreciate you taking the time to consider being a part of the *Success Case Study of the IB Educator Network* project.

Printed Name of Person Explaining Consent Form: \_\_\_\_\_

Signature of Person Explaining Consent Form: \_\_\_\_\_

Investigator: Dr. Kristine Chadwick, Educational Policy Improvement Center, Senior Director of Programs

Date: \_\_\_\_\_

## Appendix G: Literature Review and Annotated Bibliography

### Literature Review

As alluded to in the methodological approach used to cull this literature review, no individual base of scholarly research includes all the important aspects of a network as unique as IBEN. In this network, IBEN educators are not only a part of IBEN, but are also expected to construct subnetworks—formal or informal—in their schools or districts to disseminate what they glean from their IBEN training and experiences. As builders of subnetworks, it is imperative that IBEN educators understand characteristics and structures of effective, sustainable learning communities. In situating the literature review and in constructing the impact model that the review and interview findings co-informed, IBEN can be thought of as a network of networks, because it can empower a subnetwork at any International Baccalaureate–authorized school with an engaged IBEN educator. In addition to aiding in the conceptualization of IBEN, this embedded-network view also helps explain some of the diffusion in the scholarly literature on professional development networks. As such, EPIC encourages readers of this report to consider that any given finding from the literature in this section might align with IBEN as an overarching network, IBEN educators as key actors in both the overarching network and local embedded networks, or both simultaneously. When necessary and feasible, EPIC disentangles such differences in an ensuing section on this study’s impact model.

Moreover, Senge (1996), whose work on the types of leadership necessary to generate a successful learning organization is a cornerstone for this study (see Table 1), offers a way to understand leadership types within the IBEN network itself and the subnetworks that IBEN educators develop within their schools.

Table A1. *Senge’s (1996) Leader Types as an Explanatory Theory for the Multifaceted International Baccalaureate Educator Network*

Type	Role per Senge	IBEN extrapolations
Local line leaders	Test new ideas to find best practices and train others in adopting learning culture behavior, manage departments or units, and have high levels of autonomy.	From both IBEN and school perspectives, <b>IBEN educators</b> serve this role to build capacity in their schools and for educators with whom they interact in other schools.
Executive leaders	Support local line leaders, develop infrastructures for professional learning, and model learning culture behavior.	From the IBEN-as-network vantage, <b>IBEN managers</b> and other key staff serve these functions.  From the school-as-network perspective, <b>IBEN educators</b> may serve in this role within the school.
Internal networkers / community builders	Seek out those who are instrumental in changing organizational culture, assist local line leaders, spread information, and are not necessarily in positions of official authority.	From the IBEN-as-network vantage, <b>both IBEN managers and IBEN educators</b> serve in this role, acting as representatives of IBEN for International Baccalaureate’s broader purposes.

The current section begins with an introduction that explores overarching aspects of professional development networks. Next, EPIC examines categories of findings from the literature that framed the six sections of the impact model: (a) pre-participation knowledge, skills, dispositions, and actions; (b)

gained knowledge, skills, and dispositions; (c) critical actions of network participants; (d) outcomes for participants; (e) outcomes for participants' schools; and (f) program goals. Last, EPIC reports on lessons learned about contextual factors that might lead to variation in how networks are formed or in the results that they might achieve.

## Professional Development Networks

To begin, understanding professional development networks requires distinct understanding of both professional development and networks. After exploring those topics, EPIC shows characteristics of effective professional development networks.

**Professional development.** According to various scholars such as Mizell (2010), experience can teach educators more than university teacher preparatory programs. Such programs include internships and student teaching experiences but cannot provide the range of realistic learning experiences preservice teachers will encounter in their future classrooms. Therefore, ongoing professional development is a necessity to fill those gaps. Not surprisingly, given the possible variety of such gaps, professional development modes range widely, including, but not limited to, the following:

- Individual or peer/group reading, study, or research on a topic or shared need
- Observation of other teachers
- Coaching from expert teachers or mentoring from more experienced colleagues
- Faculty, grade-level, departmental, or team meetings to plan lessons, problem solve, improve performance, and/or learn new strategies
- Additional coursework from online or other sources that might include colleges and universities or private vendors' proprietary programs
- Workshops to explore a given subject in greater depth
- Conferences to garner expertise from around the state/province, country, region, or world
- Whole-school improvement programs

Experienced teachers share with recently initiated teachers the annual barrage of new challenges, such as updates to subject content, instructional methods, educational technologies, laws and procedures from various governmental sources, and student learning needs (Mizell, 2010). Absent effective professional development, teachers "do not improve their skills and student learning suffers" (p. 6). Effective professional development helps educators establish or further develop knowledge, skills, behaviors, and dispositions to address students' diverse learning needs. Consequently, effective professional development requires thoughtful planning, careful implementation, and feedback to meet *educators'* diverse learning needs. Ultimately, Mizell categories three levels of results to determine the effectiveness of professional development, (a) educators learn via participation, (b) educators use what they learn to make improvements, and (c) student learning and achievement increase because educators use what they learned from professional development.

Guskey (2002) is another seminal contributor to scholarship on professional development, specifically its evaluation. Guskey focuses on five levels of essential information in this area:

1. **Participants' reactions** – perceptions of professional development, including enjoyment of the process and understanding
2. **Participants' learning** – knowledge and skills gained to ensure alignment with intended outcomes
3. **Organization support and change** – changes following professional development, although lack of change does not necessarily reflect poor training or participation, but evaluators must examine organizational factors that may facilitate or hinder change

4. Participants' use of new knowledge and skills – impacts on practice, not just knowledge
5. **Student learning outcomes** – multiple measures to ensure identification of intended and unintended outcomes (i.e., cognitive indicators, attitudes, skills, and behaviors), as well as schoolwide indicators (e.g., enrollment in advanced courses, dropout rates)

**Networks.** Communities or other collaborative efforts that focus on narrow goals can be one approach to providing educators with professional development. Examining 16 learning communities of various purposes and sizes, A. Lieberman and Grolnick (1996) describe trusting and supportive environments in which educators exchange best practices and collaboratively confront challenges, both immediate and longer-term. Such an atmosphere encourages educators to face issues head on and ask for help, which might be otherwise uncomfortable. A. Lieberman (1996) raised several key tensions that affect the organization of learning communities or networks:

- How flexible or structured are the networks?
- How centralized or decentralized are the networks?
- To what extent do the networks restrict membership?
- Whose and what knowledge should be influencing networks the most?
- How much time and energy should networks devote to short-term versus long-term issues?

Similarly, Little (1993) prefers teacher collaboratives, subject-matter associations, and other networks as alternatives to traditional professional development as approaches for increasing educator subject knowledge and engagement. A. Lieberman and McLaughlin (1992) suggest that educator networks provide opportunities for professional development, collegiality, and motivation.

**Characteristics of effective professional development networks.** Scholars have identified an array of traits that are common to most effective professional development networks. Primarily, effective networks should focus on *specific, applicable, meaningful goals that network members share and that align with school culture and its professional development plans* (A. Lieberman & Grolnick, 1996; A. Lieberman & McLaughlin, 1992; Main, 2009; Poekert, 2012). Importantly, effective professional development networks should contribute to the production of *shared leadership* that empowers classroom educators and administrators to co-own the networks (A. Lieberman & Grolnick, 1996; A. Lieberman & McLaughlin, 1992; Poekert, 2012). Several scholars argue for leadership that is supportive, distributed, and transformational, suggesting professional development within a network can kick-start reciprocal processes in which networks influence leadership practices in recursive ways that develop an ever-increasingly effective network (Main, 2009; Nikolova & Stefanova, 2012; Poekert, 2012). The type of professional development needed to undergird such processes would be accessible, content-specific, and focused on instructional strategies, but effective professional development cannot independently guarantee schools' shifts toward shared leadership (Poekert, 2012). To be ready for shared leadership, schools must first demonstrate certain conditions (e.g., systems and structures for shared decision making).

Also, effective professional development networks avoid stagnation through *varied activities* (A. Lieberman & Grolnick, 1996; A. Lieberman & McLaughlin, 1992). Next, effective professional development networks are *deeply collaborative*, facilitating deliberative discussions and creating discourse communities (A. Lieberman & McLaughlin, 1992; Poekert, 2012). Moreover, effective professional development networks *account for sustainability* (Poekert, 2012). For example, networks must ensure quality while avoiding overextension and expanding objectives (A. Lieberman & McLaughlin, 1992), a phenomenon military strategists call "mission creep." Furthermore, effective professional development networks emphasize *strong communication strategies* such as clarity (Main, 2009) and establishing a culture of trust and respect (Poekert, 2012). Next, effective professional

development networks *monitor their own progress* (Main, 2009). Naturally—as with all implementation considerations in education contexts—effective professional development networks depend on *sufficient time and resources* (Holmes, Gardner, & Galanouli, 2007; Nikolova & Stefanova, 2012; Poekert, 2012; Varga-Atkins, Qualter, & O'Brien, 2009).

### Pre-Participation Knowledge, Skills, Dispositions, and Actions

After examining two professional development programs that focus on integrating technology into schools, Holmes et al. (2007) concluded that supporting sustained improvement requires the engagement of teachers' values, beliefs, and prior knowledge. Ensuring participant satisfaction necessitates that these attributes and their expectations align with programmatic goals. Lin (2015) found similar results with a questionnaire-based study of teachers undergoing professional development. One key takeaway from these studies: educators become frustrated when professional development programs seek to explain their students' needs to them. Instead, programs should acknowledge existing expertise to ensure relevancy and satisfaction among educators. Relatedly, A. Lieberman and Grolnick (1996) found that many networks struggle to negotiate between practitioner and external knowledge sets. Such tensions may be alleviated if networks factor educators' existing knowledge and experiences into professional development programs.

Furthermore, confidence, receptiveness, and a willingness to try something new are advantageous, if not necessary, attributes for joining and succeeding in a professional development network. Discussing implementation of new instructional practices, Nikolova and Stefanova (2012) argue that educators should be confident in their own practices and abilities, plus open to new ideas and change. Similarly, D. Lieberman (2014) describes joining a new program as a risk. Educators who lack confidence or who encounter feelings of vulnerability may need to overcome these emotions to have successful network or training experiences, according to a study on a train-the-trainer program for educators (Clemans, Berry, & Loughran, 2010). In addition, Holmes et al. (2007) cite low confidence as a common impediment to sustainable professional development.

Several scholars have explored why educators would want to join a network and what organizations and schools can do to increase participation (e.g., Heystek & Terhoven, 2015; A. Lieberman, 1996; Varga-Atkins et al., 2009). A. Lieberman argues that most educators join networks to better support their students, an assertion that educator interviews support (see Heystek & Terhoven, 2015). Interviewees describe a desire to improve their schools' academic standings; interviewees also acknowledge previous development efforts and encouragement from school leadership as motivational factors for network participation, as well as the importance of opportunities to develop instructional skills, collaborate with others, and learn content knowledge. Results from Lin's (2015) questionnaire indicated that educators care most about content knowledge when appraising professional development opportunities. Also using questionnaires, Varga-Atkins et al. found educators' attitudes correlated positively with the relevancy and variety of available professional development programs. It seems that networks would enhance their chances of recruiting a diverse set of participants by offering a variety of professional development opportunities, providing training that ensures all participants meet a baseline, and clarifying intent and expectations up front.

### Gained Knowledge, Skills, and Dispositions

Several authors make conceptual and empirical arguments about professional development networks improving teaching quality, considering such networks to be opportunities for expanding educator capacity and deepening collegiality and motivation (Bacigalupo & Cachia, 2011; A. Lieberman &

McLaughlin, 1992). Networks help educators acquire (a) content and pedagogical knowledge to improve instruction, (b) skills of andragogy (i.e., educating other adults), and/or (c) new resources.

**Content and pedagogical knowledge.** Taylor, Roth, Wilson, Stuhlsatz, and Tipton (2017) show improving teachers' pedagogical knowledge as one path to improving student outcomes. In a cluster-randomized trial, science teachers from primary schools ( $n = 42$ ) participated in professional development on content and pedagogy; peer teachers in similar institutions ( $n = 35$ ) participated in an equal amount of professional development focused only on content knowledge. Pretest/posttest differences in reasoning skills for their students ( $n = 2,823$ ) generated an effect size differential of .52 SD, favoring students whose teachers' professional development included both science content and pedagogical knowledge. Relatedly, Minner, Levy, and Century (2010) found that using professional development to expand educators' abilities to teach investigative skills (i.e., the scientific method or inquiry-based approaches) associated with student gains in content knowledge.

Various studies present an array of modes for teachers to deepen their content and pedagogical knowledge bases. Courtney (2007) showed that professional development participants appreciate teacher observations, new instructional strategies, time to discuss and share ideas, and communicating with expert consultants, all as preferred alternatives to receiving training manuals. However, Fluckiger, Lovett, and Dempster (2014) propose reading research and applying key findings as crucial components of educators' professional development. Contrastingly, some authors stress the importance of grounding professional development in areas that educators perceive as relevant or interesting, thus capitalizing on their emotional engagement with new ideas (Lauer, Christopher, Firpo-Triplett, & Buchting, 2014; A. Lieberman & Grolnick, 1996; Little, 1993).

**Andragogy.** Learning to teach teachers provides another avenue for professional development networks to help educators bring innovative practices or policies into their schools or districts (D. Lieberman, 2014). For example, Clemans, Berry, and Loughran (2010) chronicle gains in leadership skills and confidence that  $n = 75$  teachers experienced in a train-the-trainer program that included four in-person workshops designed to send teachers back to their schools to lead professional learning with their peers. Clemans and colleagues noticed one strength that developed organically: some participants formed small interschool networks to support each other between workshops. A few authors note how networks provide opportunities for teacher-leaders' self-reflection as a primary benefit (Blitz, 2013; Antoniou & Kyriakides, 2011). In particular, Blitz considers cases of online or hybrid networks that also feature in-person activities, arguing that online/hybrid networks offer greater flexibility—especially if they include diverse membership and a competent moderator—but carry the risk of reducing participants' motivations to contribute regularly.

**New resources.** The promise of acquiring resources might be the most tangible benefit that educators can derive from participating in professional development networks. Learning communities are often designed to introduce members to new tools that provide access to information (T. Chen, 2003). Correspondingly, Little (1993) identifies another participation benefit: engaging with materials and colleagues both within and outside classrooms.

### Critical Actions of Network Participants

When considering participants' actions in networks such as IBEN—a network of networks—collaboration, vision and norm setting, capacity building, and shared leadership dominated the literature EPIC reviewed.

**Collaboration.** Collaboration as a necessary component of effective networks strikes a common refrain in literature on professional learning communities (Jäppinen, Leclerc, & Tubin, 2016; Katz & Earl, 2010; Little, 1985). More than 20% of articles that EPIC reviewed for this study stressed the importance of collaboration. Ten articles described collaboration as a defining feature of networks; five other articles explicitly attributed the success of a network-to-educator collaboration.

After interviewing and observing teacher-leaders as they worked with other teachers to develop pedagogical skills, Little argues that collaboration maintains positive, meaningful relationships necessary to pursue shared goals. In examining professional learning communities that contributed to successful improvement of student outcomes and school culture, Jäppinen et al. observed, and teacher interviews corroborated, collaboration as an essential aspect of effective networks. Similarly, Wermke (2011) surveyed teachers who consistently rated collaboration with peers as the most important aspect of their professional development. Two literature reviews both recognized the importance of collaborative engagement (T. Chen, 2003; Little, 1993). Little adds that collaboration should include sharing resources in addition to practices, experiences, and ideas.

Supporting this argument, D. Lieberman (2014) and Holmes et al. (2007) use networks to exemplify structures that facilitate collaboration. Other network-focused articles treat collaboration as a given (e.g., Bacigalupo & Cachia, 2011; Blitz, 2013; Dogan, Pringle, & Mesa, 2016). Aligning with the notion of IBEN as a network of networks, Bacigalupo and Cachia suggest that networks engender collaboration within and beyond networks, creating platforms for teachers to partner with researchers and industry professionals. Blitz also advocates for expanding networks beyond their perceived limits, viewing the Internet as a golden opportunity to spread beyond the confines of a school or district to navigate constraints of time and space.

Studies that evaluate effectiveness of school improvement programs also conclude that educator collaboration is a key ingredient for success. Several studies associate the establishment of professional learning communities with increased achievement in literacy or other achievement metrics, students' grades, and engagement (Chu, 2009; Louis, Dretzke, & Wahlstrom, 2010; Parr & Timperley, 2010). Relatedly, Sandholtz and Ringstaff (2013) studied a three-year professional development program, leading them to argue that collaboration plays a crucial role in improving educators' content knowledge and instructional practices. Furthermore, principals that P. Chen (2008) interviewed came to the same conclusion, adding that collaboration also creates spaces for educators to develop and work toward a shared vision.

**Vision and norm setting.** Many authors stress the importance of casting vision and setting norms for networks to be effective (e.g., Katz & Earl, 2010; Little, 1985). The consensus seems to be that network leaders should set time specifically for network participants to develop shared goals and construct a plan to pursue them (Bacigalupo & Cachia, 2011; P. Chen, 2008; Jäppinen et al., 2016). Furthermore, networks should align their goals to those of locally relevant programs, schools, or districts (Holmes et al., 2007; Parr & Timperley, 2010). Using data to guide network strategies is another area where scholarship converges, suggesting data monitoring as one approach for ensuring relevancy, identifying problems, developing solutions, and monitoring progress, all of which contribute to a network's sustainability and effectiveness (Bacigalupo & Cachia, 2011; Fluckiger et al., 2014; Learning Forward, 2000; Mizell, 2010; Stringfield, Reynolds, & Schaffer, 2008).

But scholars do not agree on the substance and application of network goals. For example, Learning Forward (2000) pursues alignment further, recommending that professional learning outcomes align with educator performance, adding a layer of accountability for network participants. Moreover,

Fluckiger et al. (2014) endorse goals for both school improvement and student achievement. By contrast, Stringfield et al. (2008) stress that only a few objectives should be set at once.

Other strategies for creating sustainable and effective networks include adapting to suit unique local needs and contexts, as well as setting norms that reinforce collegial relationships (T. Chen, 2003; Fluckiger et al., 2014). One way to reinforce collegial relationships is to employ communication techniques that yield a shared language and collaborative pursuit of a vision (Horn & Little, 2010). With an eye on sustainability, networks should incorporate specific processes and tools within their strategic plans such as fidelity measures (Fien, Kame'enui, & Good, 2009) or structures and systems that include plans for the inevitable drift from the vision or norms (Bacigalupo & Cachia, 2011).

**Capacity building.** Opportunities to develop instructional skills is another vital input for network participants (P. Chen, 2008; Jäppinen et al., 2016; Katz & Earl, 2010; Little, 1993). In four studies that featured control and treatment groups, professional development focused on instructional strategies associated with improved student achievement. Three such studies compared inquiry-based learning to traditional teaching strategies (Antoniou & Kyriakides, 2011; Chu, 2009; Marshall & Alston, 2014; Wilson, Taylor, Kowalski, & Carlson, 2009). Antoniou and Kyriakides show the impact of teaching skill on student learning through classroom observations, teacher surveys, standardized test scores, and surveys of nearly 2,400 students. Furthermore, conceptual and research-based arguments link teachers' instructional behaviors to student achievement (Louis et al., 2010; Slavin, 2013), especially when developing those instructional behaviors incorporates the concurrent development of content knowledge and pedagogy (Parr & Timperley, 2010; Scher & O'Reilly, 2009).

**Shared leadership.** Empirical findings and conceptual articles tout advantages of shared leadership practices (e.g., Katz & Earl, 2010). Marshall and Alston (2014) studied a professional development program that required participants to implement and lead initiatives within their school or district, finding gains not only in student comprehension of science practices and concepts, but also in teachers' professional growth. P. Chen's (2008) interviews with principals showed how shared leadership can improve school effectiveness. In one study, teacher surveys show an indirect relation between shared leadership and student achievement (Louis et al., 2010). Therefore, several authors encourage network leaders to acknowledge participants' contributions because the teacher-leader role emboldens participants to take initiative and grow their skills, and also creates a culture of respect that can benefit all participants, whether they are facilitators or recipients of skill-building activities (Jäppinen et al., 2016; D. Lieberman, 2014; Little, 1985).

**Outcomes for Participants.** Networks and other professional development opportunities can produce meaningful outcomes for educators who participate, such as improving their pedagogical practices, increasing engagement and/or achievement among their students, and establishing or enhancing their professional capital. It is important to note that not every study that EPIC reviewed included reports of such outcomes, with some arguing that relations between the more proximal outcomes that participants glean and the more distal effects for students are not necessarily causal.

**Improving pedagogical practices to increase engagement and/or achievement.** EPIC found several examples that link activities consistent with professional development networks and student achievement. For example, Houtveen and van de Grift (2007) evaluated a program focused on metacognitive strategy instruction that associated with improvements in students' metacognitive skills and reading comprehension. Furthermore, Antoniou and Kyriakides (2011) observed improved exam scores among students of teachers who participated in a dynamic integrated approach to pedagogical professional development. Slavin (2013) examined studies on curriculum-based,

technology-based, and instructional process professional development programs, plus some studies on the latter that also focused on curriculum or technology. Calculating weighted mean effect sizes, Slavin concludes that the programs that were most effective for improving student outcomes incorporate pedagogical training. Additionally, Marshall and Alston (2014) evaluated an inquiry-based instruction professional development program, finding that students of participating teachers outperformed peers on standardized science exams. During the five-year program, the researchers also observed a narrowing achievement gap between Hispanic/Latino students and their Caucasian peers.

Other studies highlighted indirect connections between participation in a professional development network and improved student outcomes, such as students scoring higher on standardized tests if their teachers collaborated with colleagues (Liu, Lee, & Linn, 2010). Given that networks provide a space for educators to share best practices and cooperatively address challenges, it seems logical to conclude that student achievement gains are a plausible result of teacher collaboration. In addition, Sengupta-Irving and Enyedy (2014) suggest possible student benefits in nonacademic domains from increasing teachers' pedagogical knowledge and professional training. After finding equivalent content knowledge gains between students exposed to traditional and student-led instruction, the authors conducted a follow-up study to explore why students in the latter group reported greater enjoyment of learning. Video recordings identified greater engagement, leading Sengupta-Irving and Enyedy to theorize that improved instruction may be more successful in sustaining disciplinary interest, even when it does not affect exam scores. Moreover, students surveyed and interviewed by Saunders-Stewart, Gyles, Shore, and Bracewell (2015) support this assertion, adding that they believe they do their best work when they enjoy the subject or activity. Kahle, Meece, and Scantlebury (2000) found a similar correlation between student attitude and achievement, and Chu (2009) also concluded that students perform best when they are engaged in enjoyable work.

Without suggesting effects on student outcomes, several scholars have confirmed that pedagogical training influences classroom teaching practice (Kahle et al., 2000; National Center for Education Evaluation and Regional Assistance, 2016). For example, during an evaluation of a standards-based teaching professional development, students of teachers in the treatment group reported that their teachers used standards-based teaching practices more frequently than reported their peers in the classrooms of teachers in the comparison group (Kahle et al., 2000). In this study, regular use of standards-based teaching significantly predicted student achievement, but it did so regardless of training yielding no correlations between pedagogical training and student outcomes. A few studies have shown ongoing or multiyear professional development interventions to be more effective than short-cycle or single-year efforts (Sandholtz & Ringstaff, 2013; Scher & O'Reilly, 2009).

As noted in a previous section, implementation fidelity remains an important theme in this literature. Piasta et al. (2017) found no relation between professional development and early childhood educators' content knowledge, self-efficacy, beliefs, classroom environment, or instructional practice, but the researchers acknowledge the potential for measurement inadequacy and a failure to implement the professional development as intended.

**Professional capital.** Last among outcomes for participants themselves, Eckert, Ulmer, Khachatryan, and Ledesma (2016) highlighted the motivation of many educators to seek positions where they believed they can continue their development as teacher-leaders while influencing education policy or practice. The researchers explored reasons why teachers left their jobs after a U.S. Department of Education Teaching Ambassador Fellowship, finding that their professional development had not only engaged them in their work, but increased their professional capital such that the teachers were now

qualified for jobs with potentially higher salaries and the perception of greater prestige. By building leadership skills, developing content and pedagogical knowledge, and completing a recognized professional learning program, this program provided its participants with the requisite skills, knowledge, and experience to pursue jobs that might be better positioned to have a larger impact on education as a field.

### Outcomes for Participants' Schools

The professional development of an individual educator can lead to downstream effects beyond the participants themselves and the students in their classrooms. Especially for programs such as IBEN that include a train-the-trainer model, schools may reap various and potentially overlapping benefits such as establishing formal or informal collaboration systems, disseminating new learning widely among their other educators, changing culture and engagement, or increasing school-aggregated student achievement scores.

Marshall and Alston (2014) describe one successful, long-term professional development program in which participants were expected to disseminate their learning through their school or district, an expectation that ensured participants' personal development and the widest possible programmatic reach. Sandholtz and Ringstaff (2013) studied a different long-term professional development program without such an expectation but found that their science-focused program drastically increased the integration of science into other subjects, indicating that educators shared their training with peers. This sharing is what implementation scientists might call treatment diffusion, a challenge for researchers (Shadish, Cook, & Campbell, 2002), but often a boon for schools looking to disseminate key findings. Sandholtz and Ringstaff assert that multiyear programs are valuable in part because they encourage networking and collaboration through direct and indirect means.

Horn (2005) pushed back against the notion that whole-school reform results from networking after examining professional learning communities in the mathematics departments of two high schools. In School 1, the network co-constructed curriculum, shared best practices, and reformed their department. In School 2, the department had experienced recent whole-school reform that influenced instructional practices and curriculum. The former was far more successful in increasing advanced math enrollment. Recommendations from Stringfield et al. (2008) support this finding as they suggest teacher-leaders and network builders should focus on a few narrow objectives, which might be easier with smaller, subject-specific networks.

Findings from Parr and Timperley (2010) create some complexity in understanding the potential outcomes a school might expect from the network participation of its IBEN educator(s). Evaluating a professional development program in which an expert facilitator worked with a school, Parr and Timperley found that the expert led the school to set schoolwide goals, develop processes for monitoring data, and support teachers. If this type of network describes IBEN overall, such an approach might put outsized authority at IBEN's core, making it potentially ill-suited to meet schools' local and unique needs. Instead, if one applies this type of network to describe IBEN educators creating their subnetworks to disseminate and leverage their IBEN-learned and local expertise, then this finding might explain how IBEN educators can function as teacher-leaders within their schools (i.e., embedded networks). In the latter possibility, teacher-leaders can bring back innovative practices to their schools and "improve school culture and student achievement if they are invited to do so" (D. Lieberman, 2014, p. 23).

In combination, findings from several scholars suggest a chain of logic that supports this application of IBEN educators as teacher-leaders in their schools. Jacob, Hill, and Corey (2017) suggest professional

learning can engage instructors, and Kofman and Senge (1993) argue that such engaged people can be mobilized to change organizational culture, build leadership in others, and promote collaboration. Katz and Earl (2010) add that schools with high levels of engagement are the most highly correlated with changes in thinking, practice, and student achievement. Engagement within a school might be an important starting point, but Fluckiger et al. (2014) recommend that schools also consider partnering with industry and colleges, using teacher-leaders to facilitate such collaboration. Struggling schools in China have benefitted from such a strategy (P. Liu, 2017).

Through disseminating what they have learned, increasing educator engagement, and building partnerships, teacher-leaders may hope to improve student outcomes within their schools, not just their classrooms. A study by Parr and Timperley (2010) on a holistic professional development program led by one person at each school supports this, as do findings from studies on school-level professional development (Angrist & Lavy, 2001; Taylor et al., 2017), and an analysis of 2005 and 2008 national surveys of elementary and secondary teachers (Louis et al., 2010). All these studies indicate that shared leadership and instructional behaviors relate indirectly to student achievement, and that professional learning communities have a direct relation with student outcomes. The collected evidence suggests that engaging in activities that associate with increasing student test scores can benefit students, improve school standing to enhance competitiveness for hiring teachers or attracting students, boost morale and engagement, and help educators see the results of their efforts.

### Program Goals

If IBEN seeks to further International Baccalaureate goals and strengthen ties between schools and the organization, it should employ sustained, coordinated efforts (Marshall & Alston, 2014; Sandholtz & Ringstaff, 2013; Scher & O'Reilly, 2009). Similarly, IBEN educators must clearly understand and communicate the objectives and intentions of the International Baccalaureate, as IBEN focuses on goals that align with those of schools or districts and provides follow-up support for IBENs (Jacob & Lefgren, 2004; Lauer et al., 2014). Continued support might take the form of trainings, applied practice, spaces for collaboration within IBEN, or technical assistance (Institute for the Advancement of Research in Education, 2004). Also, IBEN should consider how to make support as effective, applicable, and convenient as possible, because onsite professional development has been shown to receive higher ratings for perceived usefulness than other modes of engagement (Dunst, Trivette, & Deal, 2011). Ultimately, programme goals might be best served if IBEN educators experience the network as applicable and reflective, so International Baccalaureate should assess IBEN educators' experiences within the network to ensure that it remains both useful and attractive to educators and to maintain close relationships.

### Contextual Factors

Contextual factors may facilitate or inhibit any educational intervention; a professional development network is no different. However, IBEN must account for the contextual variety reflecting nearly 5,000 school sites in more than 160 countries. When Little (1993) recommends that all professional development consider general teaching contexts as well as school practice and student experiences, this likely affects International Baccalaureate teaching contexts many times over. Several studies of the effects of professional development and/or networks show that outcomes depend largely on school contextual factors that are unmalleable (e.g., Fien et al., 2009; Wilson et al., 2009). But other contextual factors can be established, developed, or altered. Due to a desire to focus on malleable factors, EPIC examines the most prevalent such factors that appeared in the literature: leadership practices, school structures, collegial relationships, and government policy.

**Leadership practices.** Several studies suggest that the practices of school leaders (e.g., principals or heads of school) facilitate school improvement by influencing educators' practices and behaviors (Heck & Moriyama, 2010; Krüger, Witziers, & Slegers, 2007; Szczesiul & Huizenga, 2014). Important practices of effective leaders include dedicating time for collaboration and providing teachers with feedback on their progress toward shared goals; notably, educators feel lost unless the school leader casts a clear vision. Leaders' visions, however, might be only as strong as the confidence that educators have in them, as evidenced by studies of correlations between educators' trust in their heads of school and student achievement (Louis et al., 2010).

In school contexts where shared leadership is the dominant practice, heads of school can manage diverse and abundant issues under their oversight, situations that can otherwise inhibit school improvement efforts (P. Chen, 2008; Jacob & Lefgren, 2004; Louis et al., 2010; Mindich & Lieberman, 2012). Petridou, Nicolaidou, and Karagiorgi (2016) highlight the importance of supporting educators as they develop leadership skills, perhaps even more so in shared leadership settings. These researchers found new administrators' self-efficacy to drop over the course of a year, perhaps due to insecurities and unfamiliar struggles in new positions. Assuming that a head of school can comfortably share leadership with teachers, interviews revealed a potential windfall for schools: encouragement from school leadership and prior acknowledgment of self-improvement efforts from leadership were key motivating factors in teachers' decisions to pursue professional development (Heystek & Terhoven, 2015). This finding supports arguments to the establishment of professional learning communities, one of the many structures that effective leaders endorse in their schools (Szczesiul & Huizenga, 2014).

**School structures.** Spillane, Kim, and Frank (2012) studied the effects of organizational structures and individual characteristics on social ties among educators, finding social ties to associate more strongly with sharing of learning. They argue that schools can, therefore, be organized in ways that encourage or inhibit information sharing. Such structures can sustain learning from initiatives that are short-lived (Scher & O'Reilly, 2009) or not implemented to completion (Angrist & Lavy, 2001) and, therefore, less likely to produce desired outcomes. Instead, networks can create spaces for efforts to be developed, implemented, monitored, and adjusted, or simply for promising practices to be shared and for issues to be addressed collaboratively. Unfortunately, Grossman, Wineburg, and Woolworth (2001) explain that most schools lack other structures to support networks. One of the largest barriers to creating the appropriate structures is the funding needed to dedicate collaborative time (Mindich & Lieberman, 2012; Mizell, 2010; Varga-Atkins et al., 2009). School schedules, budgets, and even physical space can all aid or limit the creation and maintenance of networks. Loxley, Johnston, Murchan, Fitzgerald, and Quinn (2007) add that middle-management structures, such as curriculum coordinators and teacher-leaders, may also support professional development networks. Consequently, a needs analysis may be beneficial to help networks determine objectives and create a plan to develop the relevant structures (Parr & Timperley, 2010). O. Liu et al. (2010) raise the related concern of establishing school structures to retain teachers, preventing institutional knowledge from leaving a network.

**Collegial relationships.** Louis (2016) emphasizes a school culture based on trust and respect, but that is not easily developed, nor are professional relationships easy to change. Teachers generally have existing opinions of their peers when networks are formed (Grossman et al., 2001). Yet collegial relationships are necessary for developing learning communities (Mindich & Lieberman, 2012). Relatedly, learning communities also associate with increased educator engagement, which is highly correlated with a schools' capacities to change beliefs, instructional practice, and student achievement (Katz & Earl, 2010). Varga-Atkins and colleagues (2009) explain this partially by demonstrating that engaged educators are more enthusiastic about professional development and

more likely to seek opportunities to develop skills in others. They recommend schools leverage the enthusiasm of such educators to spur collaboration. Although Little (1982) does not explain how to foster a culture of collegiality, she observes that establishing shared norms and expectations about collegiality creates expectations that may be prerequisites for schools that seek to build collegiality. Furthermore, educators need more than the support of their peers and leadership; they need community support, extending the notion of collegiality beyond the ranks of educators (Nikolova & Stefanova, 2012). Schools and individual educators should consider how to build relationships with parents and other community members to foster an environment ripe for school improvement.

**Government policies.** Education policy varies across (and within) nations, but influences schools and professional development everywhere. In this instance, International Baccalaureate's considerable global reach provides an interesting set of circumstances. Loxley et al. (2007) argue that developing structures in Ireland to support professional development will be difficult to accomplish without policy changes and additional funding. Main (2009) concurs that a lack of resources is a common impediment to reform in Australia. In addition to funding, P. Chen (2008) discusses balancing competing needs for stability and reform alongside tensions between test-driven and creative education. Although individual schools and organizations cannot change government policy, their leaders must understand their respective policy contexts, so they may exploit policies that facilitate their strategies for professional development and fight against policies that hinder their efforts at school improvement.

## Annotated Bibliography

This annotated bibliography has three sections:

1. Resources beneficial to understanding structures and leadership practices that support ongoing professional development, formal and informal
2. Resources that share relevant approaches that have been found to increase student academic achievement and/or improve educator outcomes
3. Resources that discuss successful cultural and programmatic alignment

### I. Structures and Leadership Practices That Support Ongoing Professional Development

*This section includes literature reviews, empirical studies, think pieces, and a policy bulletin. Articles range from discussions on developing, improving, or evaluating professional development opportunities to examining their effects on instructional practice.*

**Bacigalupo, M., & Cachia, R. (2011). *Teacher collaboration networks in 2025: What is the role of teacher networks for professional development in Europe? Luxembourg City, Luxembourg: Publications Office of the European Union.***

*Highlights:*

- These notes from a workshop describe the outcomes of a discussion with educators on the benefits and challenges of teacher networks.
- Workshop participants described strategies for expanding networks.

The authors summarize a discussion-oriented workshop on how teachers use networks and how networks are renovating educational systems. Although teachers recognized that they lacked quantitative data to support networks' effects on teacher quality, workshop participants asserted the following through anecdotal data:

- Networks improve teaching quality by supporting teachers in expanding their capacity.
- Networks are currently limited by a culture that does not value or promote open educational resources.
- Educators should be involved in the development of applications that will support their needs and pursuits.
- Networks need to be expanded to include more teachers, not just innovators.

To achieve the latter, participants suggested the following:

- Schools promote and value innovative professional development pursuits and avoid overloading teachers.
- Networks facilitate resource-sharing.
- Networks create quality-control mechanisms.
- Networks establish organizational scaffolding to support new members.
- Networks develop long-term plans to sustain themselves.

**Blitz, C. L. (2013) *Can online learning communities achieve the goals of traditional professional learning communities? What the literature says.* Washington, DC: U.S. Department of Education.**

*Highlights:*

*Inflexion*

- This literature review discusses advantages, disadvantages, and best practices of online professional learning communities.
- The author suggests that traditional professional learning communities should consider moving toward a hybrid structure—one that uses the Internet to increase flexibility and self-reflection.

This literature review examines the advantages, challenges, and best practices of online professional learning communities (PLCs) and recommends traditional PLCs consider using the Internet to transform their practices. Like traditional PLCs, studies suggest that online PLCs can provide opportunities for collaboration and meaningful professional development. Advantages over traditional PLCs include flexibility and improved self-reflection on instructional practices. On the other hand, the literature indicates teachers are less motivated to contribute regularly in online PLCs. The author also found that online PLCs are most effective when they have diverse membership and a competent moderator, and that hybrid PLCs—ones that incorporate in-person activities—are more productive than purely online PLCs.

**Chen, P. (2008). Strategic leadership and school reform in Taiwan. *School Effectiveness and School Improvement*, 19(3), 293–318.**

*Highlights:*

- This case study explores school leadership practices that have helped school leaders to facilitate improvements and handle obstacles in school reform efforts in Taiwan.
- The author identifies four major themes of strategic leadership for effective leadership practices: educational values, timeframe for change, capacity building, and parental involvement.

This case study examines factors of school dynamics and strategic leadership practices that led to improvements in school effectiveness. Through on-site visits and interviews with the school principal and 15 other educators, Chen explored the importance of principal leadership in empowering educators to take action by identifying strategic focuses, implementing new school improvement initiatives, making decisions, managing parent relations, and offering guidance and support. The author identifies four strategic themes for dynamic and effective school leadership practices:

- Educational values – The principal maintained a balance between the pressures to prepare junior high students for the competency high school admittance test and fostering creative education, seeing the two goals as complementary.
- Timeframe for change – The principal maintained a balance between the need for short-term and long-term goals and achievement for reform through two strategies: improvement initiative programs and providing opportunities for teachers and staff members to be recognized and awarded for their school reform efforts.
- Capacity building – By organizing a leadership team that practiced shared decision making and by establishing a system of teamwork, the principle created a learning space that allowed the administration to acquire new skills and attitudes and develop their shared vision, core values, and working principles.
- Parental involvement – Efforts to clean up favoritism and encourage genuine parent involvement were enacted. Business between the school and parents was discouraged, which led parents with personal agendas to leave the parent association board and encouraged those with commitment to the interests of the school to join.

The case study found that the most challenging aspects of strategic leadership were minimizing conflicts between establishing test-driven education and creative education as well as the need for stability versus reform.

**Chen, T. (2003). Recommendations for creating and maintaining effective networked learning communities: A review of the literature. *International Journal of Instructional Media*, 30(1), 35–44.**

*Highlights:*

- This literature review suggests successful networked learning communities are interactive, collaborative, meaningful and motivational, and accessible.
- The author introduces strategies for maintaining networked learning communities.

This literature review discusses the advantages of educator networked learning communities (NLCs) that are technologically enhanced over traditional learning communities that are bound to the classroom and explores successful approaches to maintaining them. Chen asserts that one of the main goals of NLCs is to encourage inquiry and introduce members to new tools that provide access to information. Through an evaluation of relevant literature, the author identifies features of successful NLCs and offers approaches for embedding these qualities. These characteristics are:

- Interactivity
- Opportunities for collaboration
- Meaningful and motivating context
- Continuously available learning environments

The identified characteristics of successful NLCs are basic, but fundamental, and the recommendations for improving them are specific and low-cost, such as clarifying communication norms, using technology that is available and accessible, and providing some technological support. Chen does not mention alternative recommendations for designing NLCs or address the advantages and disadvantages of traditional learning communities or hybrid learning communities.

**Clemans, A., Berry, A., & Loughran, J. (2010). Lost and found in transition: The professional journey of teacher educators. *Professional Development in Education*, 36(1–2), 211–228.**

*Highlights:*

- Teachers who were trained to lead professional development for others struggled initially with discomfort in their new roles, but experienced professional growth as they made connections between teaching students and teaching peers.
- Small networks provided support as their participants struggled with the loss and formation of their professional identities.

The authors report on a train-the-trainer program that supported 75 teachers who returned to their schools to lead professional learning with their peers. The program included four in-person workshops designed to teach participants about professional and adult learning and prepare them to design and implement professional development at their own schools. Small networks were formed so participants could support each other between workshops. An analysis of participants' case-writings revealed these themes:

- Feelings of vulnerability in their new roles

- Resistance from peers
- Loss of confidence in their ability to teach
- Gained confidence as connections were made between teaching children and teaching peers
- Professional learning through leading professional development

According to the authors, the networks served to support participants as they struggled with identity loss and formation. In these networks, the educators shared their experiences and collaboratively worked on common problems, providing the support and encouragement participants needed.

**Dunst, C. J., Trivette, C. M., & Deal, A. G. (2011). Effects of in-service training on early intervention practitioners' use of family-systems intervention practices in the USA. *Professional Development in Education, 37(2), 181–196.***

*Highlights:*

- The authors conducted a study to test the effectiveness of three types of in-service training on early intervention practitioners' abilities to use family–systems intervention practices.
- Both types of on-site, field-based training contributed to greater benefits when compared to other types of training, with enhanced field-based training found to be associated with optimal participant benefits.

This study tests the effects of three different types of in-service training: conference presentations, workshops, and on-site field-based training. Participants (n = 473) were randomly assigned to participate in the trainings and then evaluate them on usefulness and changes in practitioner abilities to use family-systems intervention techniques. Usefulness was gauged by asking participants the extent to which they found the training useful in their work with families, and ability was assessed by asking participants to indicate the extent to which the trainings improved their ability to work with families. According to the authors, on-site field-based training had a much greater influence on participants' judgments of the usefulness of the training, and their abilities to use the family-systems intervention practices, than did conference presentations and workshops. The authors attributed this to the real-life application of the practices learned and identify four key elements of the in-service training associated with positive benefits to the practitioners:

- Application
- Evaluation
- Reflection
- Assessment of mastery

**Elmore, R. F., & Burney, D. (1998). *Improving instruction through professional development in New York City's Community District #2 (Policy Bulletin)*. Philadelphia, PA: University of Pennsylvania.**

*Highlight: This policy bulletin shares the professional development models of a school district that improved instruction.*

This policy bulletin describes the efforts of Community School District #2 in New York City to use staff development to improve instruction. According to the authors, the professional development strategies below led to the district's move from a middle-ranked district to the second-ranked district in the city (out of 32). The authors do not discuss the specific improvements resulting from these professional development models, nor did they discuss how districts are ranked or how long it took the district to rise through the ranks.

- The professional development laboratory – Teachers visit the classrooms of experienced educators to observe and practice their techniques for three weeks. The authors point out that this is not a punitive or remedial practice.
- Instructional consulting services – Consultants work closely with individual teachers to improve their practices.
- Inter-visitation and peer networks – Teachers and principals network to collaboratively explore best practices found within and outside the district.
- Off-site training – At the school level, teachers and administrators use this time to determine, plan, and evaluate strategies, focusing on a few goals.
- Oversight and principal site visits – Principals develop annual plans that district leaders use to closely monitor instructional improvement at each site.

The authors recognize that this district has the advantages of being able to hire consultants and offer incentives for improving teaching but argue that all districts can benefit from a long-term focus on instructional improvement.

**Fluckiger, B., Lovett, S., & Dempster, N. (2014). Judging the quality of school leadership learning programmes: An international search. *Professional Development in Education*, 40(4), 561–575.**

*Highlight: The authors share 10 criteria they suggest as a framework for evaluating or building professional development programs.*

The authors outline 10 suggested criteria for professional development and apply them to examples of professional development programs in five countries. They argue that effective professional development programs

- adapt to individual and system needs,
- set goals that focus both on school improvement and student achievement,
- incorporate key research findings,
- are sustained and have sufficient allocated time,
- focus on practice,
- are tailored for stages of an educator’s career,
- are supported by peers,
- adapt to different school contexts and cultures,
- bring in industry and college partners, and
- evaluate their effects.

As an exercise to see application of their criteria, the authors use them to evaluate eight professional development programs from Australia, Canada, England, Scotland, and New Zealand. After completing the exercise, the authors feel confident asserting that these 10 criteria are valuable in assessing the strengths and weaknesses of, or building, professional development programs.

**Grossman, P., Wineburg, S., & Woolworth, S. (2001). Toward a theory of teacher community. *Teachers College Record*, 103, 942–1012.**

*Highlights:*

- The authors propose a model of teacher community that requires a shared language, norms, a common purpose, and balanced focuses of improving student outcomes and increasing professional capital.

- This article shares challenges one site-based teacher group faced in transitioning into a community.

This article proposes a model of teacher community based on a balance between focusing on improving student outcomes and treating teachers as students. The authors reject the notion of community as a mere group, arguing that communities require a shared language, norms, and vision, as well as social negotiation and regulation of social interactions. Based on literature and the author's experiences with a semimonthly interdisciplinary community, the authors discuss the following challenges to teacher communities:

1. Traditionally, professional development opportunities are one-off and occur outside the school's context.
2. Most American high schools lack structures for supporting sustained teacher communities.
3. Teachers generally have existing opinions of their peers when entering a school-based community.
4. Teacher communities must balance the differing expectations and goals of community members to ensure relevancy.
5. Communities can give the illusion of consensus when members avoid or seek to suppress conflict, which can hide issues that need to be addressed.
6. Teachers are used to being the primary authority in their classrooms. They will need to shift their perspective and practice listening skills when in a community.
7. Communities require collective learning and individual application of new knowledge.

The authors focus their efforts on discussion of these challenges, but also offer tips and strategies for addressing them.

**Guskey, T. R. (2002). Does it make a difference? Evaluating professional development. *Educational Leadership*, 59(6), 45–51.**

*Highlights:*

- Guskey identifies five levels of outcomes to consider when evaluating educator professional development programs.
- The author argues that evidence supporting these outcomes should be meaningful to stakeholders, which may include anecdotes and testimonials.

The author proposes evaluating educator professional development programs using five levels of information. He argues that these levels should be used to evaluate not only formal workshops and seminars, but also informal professional development such as collaborative work time, curriculum development, and peer coaching:

1. **Participants' reactions** – Evaluators should measure participants' general perceptions of the professional development, including whether they enjoyed the process and understood the materials. Guskey adds that evaluators should even consider the comfort of participants, asserting that, "Was the coffee hot and ready on time?" is a valid and useful question (p. 46).
2. **Participants' learning** – Evaluators must measure the knowledge and skills gained by participants to ensure alignment with intended outcomes.
3. **Organization support and change** – Guskey encourages evaluators to examine organizational change following professional development. He emphasizes that lack of change does not necessarily reflect poor training or participation, but that evaluators must consider organizational factors that facilitate or hinder change.

4. **Participants' use of new knowledge and skills** – Professional development should have an impact on practice, not just knowledge. Evaluators should examine the extent of implementation following professional development.
5. **Student learning outcomes** – Guskey calls student learning the “bottom line” of professional development. He cautions against measuring student learning only for intended outcomes, recommending multiple measures to ensure unintended outcomes are identified. In addition to cognitive indicators, he suggests measuring attitudes, skills and behaviors, and schoolwide indicators such as enrollment in advanced courses or dropout rates.

Guskey acknowledges that most schools and districts implement multiple initiatives simultaneously. With this in mind, he encourages evaluators to look for *evidence* of a program's outcomes rather than trying to *prove* its success. He draws this distinction in part to justify and advocate the use of anecdotes and testimonials alongside less subjective data, arguing that such personalized evidence can be the most persuasive, even if less reliable.

**Gutierrez, S. B. (2016). Building a classroom-based professional learning community through lesson study: Insights from elementary school science teachers. *Professional Development in Education*, 42(5), 801–817.**

*Highlight: The authors discuss the outcomes of a lesson study model, asserting that this is an effective, collaborative, and sustainable form of site-based professional development.*

The authors studied the impact of a lesson study professional development model incorporating inquiry-based teaching and development of shared goals and lesson plans. The program was split into planning and implementation stages, with time for reflection built into each. Through observations, discussion transcripts, reflective journals, and interviews, the researchers determined the outcomes of the program to include

- development of a collaborative and trusting professional learning community,
- identification of instructional weaknesses,
- increased educator content knowledge, and
- improved instructional strategies.

The authors conclude that lesson study is an effective and sustainable professional development model.

**Heystek, J., & Terhoven, R. (2015). Motivation as critical factor for teacher development in contextually challenging underperforming schools in South Africa. *Professional Development in Education*, 41(4), 624–639.**

*Highlight: Interviews with effective, experienced teachers in underperforming schools reveal motivators for their professional development participation, including encouragement and acknowledgment from site leaders, the opportunity to learn new skills, and the chance to collaborate with colleagues.*

Using literature and case studies, the authors discuss factors that motivate teachers to participate in professional development. The two case study schools were selected based on their “underperforming” status, since the authors were most interested in this research being used to encourage professional development that could transform underperforming schools. Teachers with 10 or more years of experience, who were active in professional development activities and had

students who performed well on a national exam, were interviewed by the researchers, as were the principals.

Interviewees cited the following as contributors to their motivation to participate in professional development:

- a passion for helping students,
- encouragement from school leadership to participate,
- the opportunity to learn content knowledge,
- the opportunity to develop instructional skills,
- engaging presentation,
- the desire to improve a school's academic standing,
- the opportunity to collaborate with other educators, and
- prior acknowledgment of self-improvement efforts from school leadership.

The authors recognize that internal motivations are difficult to address, but argue that school leader behavior can motivate teachers to participate in professional development activities and that increasing professional development opportunities, especially those that offer collaboration time, will increase participation.

**Holmes, B., Gardner, J., & Galanouli, D. (2007). Striking the right chord and sustaining successful professional development in information and communications technologies. *Journal of In-service Education*, 33(4), 389–404.**

*Highlight: The authors consider challenges of sustaining improvement from professional development and discuss how to develop sustainable programs.*

Through two case studies, the authors discuss challenges of and strategies for sustaining the effects of professional development beyond training programs. The authors identify these common impediments to applying professional development lessons to practice:

- insufficient time to experiment with and evaluate strategies,
- underdeveloped competence in new skills,
- low confidence, and
- insufficient access to quality resources.

To develop sustainable professional development, the authors recommend

- engaging teachers' values, beliefs, and prior knowledge;
- clarifying intended outcomes;
- aligning program goals with school or district goals; and
- building in peer support, perhaps through a professional learning community.

**Horn, I. S. (2005). Learning on the job: A situated account of teacher learning in high school mathematics departments. *Cognition and Instruction*, 23(2), 207–236.**

*Highlight: The author compared a high school that had successfully undertaken a whole-school reform effort with a high school that experienced reform at the department level, focusing on the mathematics department. She found that the department-level reform had a greater effect on student persistence in math than the whole-school reform.*

The author explores how everyday interactions in reforming schools support teacher development, using a comparative case study of mathematics teachers in two high schools reputed for their professional communities. In one high school, math teachers met monthly, primarily to take care of logistical issues, with a secondary focus on sharing instructional ideas. In the other, teachers met more regularly and had elements of a community, such as a shared language. The former had experienced whole-school reform that included teacher research groups, student projects, and portfolios. In the latter, reform had primarily taken place within the mathematics department and “emphasized conceptual understanding through the use of collaborative investigations of complex problems” (p. 216).

Despite enrolling more students from demographic groups with historically low higher mathematics participation rates, the second school had significantly more students enroll in calculus and other advanced mathematics courses. To explain this mathematics persistence, the author points to the school’s subject-based professional community, which was committed to developing curriculum and sharing practices within the curriculum, while the first school’s whole-school reform was more holistic than discipline-specific. Although the whole-school reform may have had an effect elsewhere, it did not reach into the mathematics department.

**Horn, I. S., & Little, J. W. (2010). Attending to problems of practice: Routines and resources for professional learning in teachers’ workplace interactions. *American Educational Research Journal*, 47(1), 181–217.**

*Highlight: A professional learning community with supportive conversational techniques was more successful in developing shared frames of reference and a common curriculum than one in which teachers failed to normalize classroom challenges and share related experiences.*

In this study, authors compare the conversational routines of two different professional learning communities to understand what factors can support teacher workgroups. Conversational routines are described as “recurrent ways that conversations unfold within a social group” (p. 184).

The researchers found that although both groups set ambitious goals for student learning and embraced accountability for improvements, they had very different conversational routines. One group would address problems raised by normalizing the issue while still legitimizing it, asking clarifying questions, discussing their specific experiences, and sharing general lessons based on these experiences that could be applied to the situation at hand. They avoided blaming each other while still taking responsibility through the normalizing process and by focusing on teacher growth through experience. The other group would begin offering solutions immediately, rather than sharing their own experiences or getting more information. Issues were treated as singular instances rather than as opportunities for veteran teachers to share lessons learned over the years.

At least partially as a result of these communication techniques, the former learning community was able to establish a common curriculum and shared language and concepts. The latter struggled to develop shared frames of reference, individual perspectives and approaches were most prevalent, and attempts to create a common curriculum were not fruitful. Although the authors acknowledge that teachers’ differing levels of experience, skills, and knowledge attributed to the contrasting conversational practices, they argue that learning communities can orient themselves in a way in which they encourage supportive discourse. This discourse, they assert, affects capacity for meaningful change.

**The Institute for the Advancement of Research in Education. (2004). *Review of the research: Nine components of effective professional development*. Charleston, WV: AEL.**

*Highlights:*

- This literature review provides support for nine characteristics of professional development services offered by Texas Instruments, but common among other professional development programs.
- The authors recommend professional evaluation be based on utility, feasibility, propriety, and accuracy.

This literature review focuses on the nine components of professional development services provided by Texas Instruments' Educational and Productivity Solutions Division. This division believes that effective professional development

- addresses student-learning needs;
- incorporates hands-on technology;
- is job-embedded;
- has application to specific curricula;
- addresses knowledges, skills, and beliefs;
- occurs over time;
- occurs with colleagues;
- provides technical assistance and support to teachers; and
- incorporates evaluation.

Based on experiments and quasi-experiments that support these components, the report suggests that all nine are important and found no evidence that any is more important than another.

The authors recommend randomized control trials to examine professional development and suggest that professional development programs be evaluated on their utility, feasibility, propriety, and accuracy.

**Jacob, A., & McGovern, K. (2015). *The mirage: Confronting the hard truth about our quest for teacher development*. Brooklyn, NY: TNTP.**

*Highlights:*

- Most teachers in this study did not improve their performance, despite ample professional development.
- The researchers were unable to identify professional development approaches, teacher attributes, or work environments that facilitated teacher improvement.
- The authors argue that there is "a pervasive culture of low expectations for teacher development and performance" (p. 2) that contributes to the ineffectiveness of professional development activities.

This report shares findings from their research on professional development in three large public high school districts and one midsize charter school network. Using surveys, interviews, and focus groups with teachers and school leaders and performance data based on classroom observations and summative evaluations, the authors sought to identify and study teachers whose performance had improved due to professional development.

The researchers found that approximately 70% of teachers in the study did not see improvement in their evaluation ratings over the course of a few years despite spending, on average, 19 full days on professional development each school year. Most substantial improvement was seen in the first few years of teaching, and many plateaued before becoming efficient in core instructional skills. For those who did improve substantially over time, the researchers could find no common variable to distinguish them from other teachers. There were no meaningful differences between the types or amount of professional development received, personal mindsets, or environments of teachers who improved and those who did not.

The authors suggest higher expectations and meaningful feedback for teachers may improve performance. Through this study, they found a frequent disconnect between teachers' performance ratings from the district and student outcomes, and between teacher and district perceptions of performance among low-rated teachers. To argue for more meaningful and rigorous professional development, they note that although most teachers reported being satisfied with their professional development experiences, only 36% considered professional development to be a good use of time.

**Jäppinen, A. K., Leclerc, M., & Tubin, D. (2016). Collaborativeness as the core of professional learning communities beyond culture and context: Evidence from Canada, Finland, and Israel. *School Effectiveness and School Improvement*, 27(3), 315–332.**

*Highlights:*

- Based on international case studies, the authors argue that effective professional learning communities require deep, mutual learning to be at the center of all efforts and practices.
- The authors argue that these networks can lead to school improvement, but do not provide examples or data to support the argument.

The authors examined professional learning communities (PLCs) in Canada, Finland, and Israel to identify collaborative leadership and working practices that are fundamental to increasing school culture and academic capacity. The PLCs were identified as effective based on their set goals of increasing student performance, supportive environments, and collaborative practices. After analyzing interviews and observations using the TenKeys® model, the researchers determined that a “dynamic relationship between mutual learning and deep learning” (p. 322) is the key ingredient to PLC collaboration, and requires the following:

1. Continuous learning – Leaders support continuous learning by promoting self-reflection and trial and error.
2. Shared knowledge – Exchanging knowledge and ideas provides opportunities for meaningful collaboration and capacity building.
3. Time – Collaboration requires a sufficient amount and quality of time to allow for meaningful reflection and discussion.
4. Engagement – Participants feel excited about the work and understand its importance. Their contributions are appreciated and acknowledged.
5. Mutual respect – Participants respect and trust one another.

The authors did not discuss the effects PLCs can have on student outcomes or academic capacities but assert that they can fundamentally change a school.

**Katz, S., & Earl, L. (2010). Learning about networked learning communities. *School Effectiveness and School Improvement*, 21(1), 27–51.**

*Highlights:*

- This paper explores the effectiveness of professional networks in allowing practitioners to acquire deep knowledge and make meaningful changes in their classrooms.
- The authors discuss the relationship between networks and schools, asserting that they are both part of and distinct from the latter.

This paper explores how networks operate by testing a theory of action through a large-scale survey of schools in England's Networked Learning Communities (NLC) Programme. The authors identify six characteristics of successful networked learning communities that have statistically significant relationships with pupil outcomes. The study explored how these features manifest in each of the two organizational units—the school and the network—and the extent to which they relate to practice and pupil learning. The six characteristics are

- purpose
- relationships
- collaboration
- inquiry
- leadership
- capacity building

The authors found a connection between teacher engagement in a network and improvement in pupil attainment. Furthermore, schools with high levels of engagement were the most highly correlated with changes in thinking, practice, and pupil attainment. The authors identified change in thinking and practice as crucial to positive change in pupils, yet found that less than half of the participant schools indicated such changes.

**Kofman, F., & Senge, P. M. (1993). Communities of commitment: The heart of learning organizations. *Organizational Dynamics*, 22(2), 5–23.**

*Highlights:*

- The authors identify common problems organizations face as they transition into learning organizations.
- The authors identify characteristics that organizations must develop in order to become learning organizations.

The authors define a learning organization as “one that continuously adapts to a changing and interdependent environment” (p. 5) and asserts that such an organization must be committed to societal changes. They discuss common problems organizations have, such as fragmentation, an imbalance between competition and cooperation, and reactivity, and try to explain their origins. In order for an organization to become a learning organization, the authors argue that they must have these characteristics:

- a culture of humility and compassion
- an environment in which people speak candidly and listen openly
- practices that promote collaboration
- an understanding of the system as a whole
- room for reflection
- a focus on sustainable solutions
- shared leadership

According to Kofman and Senge, these communities can transform an organization by mobilizing key people to drive the change, engaging members in community-building activities, and experimenting with innovative practices.

**Krüger, M. L., Witziers, B., & Sleegers, P. (2007). The impact of school leadership on school level factors: Validation of a causal model. *School Effectiveness and School Improvement, 18*(1), 1–20.**

*Highlights:*

- This article examines the chain of variables between the principal, the school's educational leadership, and student outcomes.
- Through a review of empirical studies, the authors find a reciprocal relationship between student commitment and strategic leadership. They argue that principals play a key role in encouraging shared leadership, which leads to school improvement.

The authors explore the effects of principal leadership on educational leadership, and educational leadership on student commitment, through an analysis of prior studies. This secondary analysis found no effects of instructional or strategic leadership on student commitment. Additionally, school leadership was found to have a limited effect on school culture, suggesting an indirect effect.

However, the analysis did suggest that the principal's vision has an effect on the practice of other educators. Specifically, the value a principal places on shared educational leadership influences the practices and behavior of other educators. The authors note that this suggests the importance of cognitive processes in understanding the impact that school leaders can have on school improvement. Lastly, a reciprocal relationship was found between student commitment and strategic leadership. The authors assert that schools with lower levels of student commitment need their leaders to strategically set and pursue educational goals.

**Lauer, P. A., Christopher, D. E., Firpo-Triplett, R., & Buchting, F. (2014). The impact of short-term professional development on participant outcomes: A review of the literature. *Professional Development in Education, 40*(2), 207–227.**

*Highlights:*

- This literature review discusses the characteristics of effective short-term, face-to-face professional development activities.
- The authors identified characteristics of effective short-term professional development, including sufficient time, learning objectives, relevancy, modeling behaviors and practices, participant practice, group discussions, preparatory and follow-up work, and sustained support.

This literature review examines the design and learning process of professional development and identifies characteristics of short duration (30 hours or less) workshops, trainings, and other group events that positively affect educators. The authors identified the following design features of short-term professional development that were associated with positive participant outcomes:

- Learning objectives are based on the needs of participants.
- Learning objectives are clearly communicated to participants.
- Design and duration are based on learning objectives.
- Activities include time for discussion and practice of new skills.

- Outcomes are evaluated based on learning objectives.
- Pre- and post-work supplements limited in-person time.
- Development is sustained through follow-up support.

**Learning Forward. (2000). *Quick reference guide: Standards for professional learning*. Retrieved from: [https://learningforward.org/docs/pdf/standardsreference guide.pdf?sfvrsn=0](https://learningforward.org/docs/pdf/standardsreference%20guide.pdf?sfvrsn=0)**

*Highlights:*

- Learning Forward outlines and describes their standards for effective professional learning.
- This reference guide asserts that improved teacher practice leads to a greater chance of improved student outcomes.

Learning Forward describes standards for effective professional learning based on research and practice. These standards were developed in collaboration with leading education organizations, including national associations of administrators and teachers, the Parent Teacher Association, ASCD, and the U.S. Department of Education. The seven standards for professional learning are

- Learning communities focused on sustained improvement, accountability, and alignment of purpose with school goals
- Leaders who support professional learning
- Resources for professional learning
- Data to plan and evaluate professional learning
- Learning designs that integrate theories, research, and frameworks
- Implementation of professional learning
- Outcomes aligned with educator performance

Furthermore, Learning Forward argues that effective professional learning requires educators to be committed to supporting all students, ready to engage with one another respectfully, determined, and patient. Although student outcomes are not explicit in their standards, Learning Forward asserts that “when educator practice improves, students have a greater likelihood of achieving results” (p. 2).

**Lieberman, A. (1996). *Creating intentional learning communities. Educational Leadership, 54(3), 51–55.***

*Highlights:*

- Professional learning communities offer a safe environment for teachers to acknowledge and address challenges they face.
- As active members, educators have great influence over the activities and structure of a professional learning community, unlike other forms of professional development.
- The author describes common decisions that must be made over the development of a professional learning community.

Lieberman summarizes the findings of a study she conducted with Maureen Grolnick examining 16 learning communities of various purposes and sizes to understand the growing popularity of these educational reform networks. Learning communities are described as trusting and supportive environments in which educators exchange best practices and collaboratively confront challenges, both immediate and longer-term. The author argues that this atmosphere encourages educators to face issues head on and ask for help, which may be uncomfortable in other situations. In other ways, such as activities and structures, these networks may be quite different. Lieberman identified the

following tensions many learning communities have to face to determine how they wish to be organized:

- How flexible or structured should the network be?
- Should the network be centralized or decentralized?
- What membership restrictions should be put into place?
- Whose and what knowledge should be most influential?
- How much time and energy should be devoted to short-term versus long-term issues?

Because learning communities value educators as active participants rather than passive observers, they will largely influence the decisions made regarding the structure and activities of a network. This collaborative control may be what is so appealing about these networks. Lieberman adds that most educators join in order to better support their students but does not elaborate on what student outcomes may result from a teacher's participation in a professional learning community.

**Lieberman, A., & Grolnick, M. (1996). Networks and reform in American education. *Teachers College Record*, 98(1), 7–39.**

*Highlights:*

- The authors describe organizational themes common to educational reform networks that have existed for a significant period of time.
- The authors share common tensions and varied approaches to them.

The authors studied 16 sustained educational reform networks to determine organizational themes that highlight their practices, structures, and culture. They list five organizational themes:

1. Purposes and direction – Although they developed in different ways in different networks, all networks studied had shared purposes and a common direction.
2. Building collaboration, consensus, and commitment – The networks were responsive to their members' interests and needs and are egalitarian.
3. Activities and relationships as important as building blocks – The networks studied facilitated activities and relationships that created a sense of community and addressed the needs and interests of members.
4. Leadership as cross-cultural brokering and facilitating – Leadership styles varied across networks, but leadership generally required brokering, facilitating, and organizing.
5. Dealing with the funding problem – Networks often struggle to maintain funding and often rely on foundations and private corporations.

Additionally, networks commonly struggled with negotiating tensions between activities relating to their purpose and administrative tasks, practitioner knowledge and external knowledge, centralization and decentralization, and flexibility and formality. The authors provide examples of how different networks have approached each of these challenges.

**Lieberman, A., & McLaughlin, M. W. (1992). Networks for educational change: Powerful and problematic. *Phi Delta Kappan*, 73, 673–677.**

*Highlights:*

- Strong networks have a specific audience and purpose, offer varied activities, and create discourse communities.

- Networks need to ensure quality, applicability, and teacher ownership while avoiding overextension, expanding objectives, and unclear goals.

The authors claim that educator networks provide opportunities for professional development, collegiality, and motivation. They argue that successful networks share certain characteristics: they focus on a specific audience and purpose, they include varied activities, and they encourage and facilitate deliberation and discussion. The authors also point out common issues networks run into that they must manage in order to be sustainable. These issues include applicability, overextension, expanding objectives, and unclear goals. Although this article suggests that networks are preferable to educators over traditional professional development, the authors do not discuss network effects on student learning.

**Lieberman, D. S. (2014). Connect. Risk. Ask. Share. Lead! *Phi Delta Kappan*, 95(7), 22–23.**

*Highlights:*

- Teacher leaders are in a position to advocate for students and bring innovative practices and policies into a school or district.
- The author offers tips to teachers interested in a teacher leadership position that she believes will ultimately improve school culture and student outcomes but does not explicitly discuss what these improvements look like.

The author discusses her road to teacher leadership and offers tips for teachers interested in becoming teacher leaders. She recommends teachers do the following:

- Recognize and share their strengths
- Use professional development to pursue interests and strengthen skills
- Take risks
- Make connections
- Get out of the classroom
- Apply to programs, scholarships, and opportunities
- Join professional organizations
- Take advantage of online professional learning networks and social media
- Ask for what they need
- Help others become teacher leaders

Through these practices, Lieberman suggests that the teacher leader, his or her peers, and students can benefit. Teacher leaders can bring back innovative practices to the school and are in a position to advocate for others, which Lieberman supports with a personal anecdote about persuading her district to change its policy on podcasting. She does not discuss the effect teacher leaders can have on student outcomes but argues that they “can improve school culture and student achievement if they are invited to do so” (p. 23). Lieberman does not explicitly address school culture, either, but clearly teachers became more motivated through her recommended practices.

**Lieberman, A., & Mace, D. P. (2010). Making practice public: Teacher learning in the 21<sup>st</sup> century. *Journal of Teacher Education*, 61(1–2), 77–88.**

*Highlights:*

- Many high-achieving countries provide significant time for teachers to collaborate on building lesson plans.

- Trainings to use multimedia to share practices and solicit feedback from peers proved beneficial for experienced teachers.

This article provides insight on how opportunities for peers to review each other's practices can increase the sustainability and value of professional learning opportunities, focusing on the use of social networking and new media tools to facilitate this process. The authors review international research focused on strategies of educator professional development in high-achieving countries and share their own experiences working with success cases through the Carnegie Academy of the Scholarship of Teaching and Learning (CASTL). They assert that shifting from the view of professional development as an individual practice to a social endeavor can improve education by providing opportunities for teachers to share best practices and solicit feedback from fellow practitioners, which in turn develops a sense of community and shared responsibility. The specific tools of the professional development program created by the authors at CASTL may not be relevant to this project, but the values behind their approach are germane to any attempt to alleviate professional isolation and increase sustainability.

**Lin, Z. (2015). In-service professional development in an online environment: What are South Australian English as an additional language or dialect teachers' views? *Professional Development in Education*, 41(3), 527–545.**

*Highlight: The author discusses teacher responses to a questionnaire on professional development preferences and recommends providers consider teacher motivators and deterrents when building programs.*

Through interviews and surveys, the author explores English as an additional language and dialect teachers' motivators and deterrents of pursuing professional development. Eighty-three teachers completed questionnaires and nine of those were interviewed.

The questionnaire indicated that educators care most about the content, amount of work required, and length of professional development programs when deciding whether to participate. Networking opportunities, official recognition of the program, the cost, and anonymity were rated as having the least impact on educators' decision to participate. When asked to rank compelling factors for professional development participation, 77.1% identified planning for effective learning. Understanding student needs was the least compelling factor. In terms of knowledge and practice, respondents were most interested in learning about pedagogical knowledge and using technology effectively, and least interested in classroom management skills and cultural inclusivity. Educators reported a preference for face-to-face learning and a distaste for professional development conducted entirely by video conference. The authors suggest professional development providers should consider teacher preferences when building their programs to ensure relevancy and motivation that will increase and improve participation and outcomes.

**Little, J. W. (1985). Teachers as teacher advisors: The delicacy of collegial leadership. *Educational Leadership*, 43(3), 34–36.**

*Highlight: This article shares six principles to help teacher advisors maintain successful, collegial relationships while giving advice to teachers.*

Little shares some lessons from the Teacher Advisor Project at the Marin County Office of Education for teacher advisors supporting other teachers as they develop new classroom skills. From

observations and interviews, the Teacher Advisor Project developed six principles of advising to maintain positive, collegial, meaningful relationships:

- Common language – Teachers and their paired advisors agree on shared language to discuss teaching practices.
- Focus – Pairs decide on one or two issues to address at a time.
- Hard evidence – Pairs keep a record of classroom interaction and refer to it when asking questions, forming assumptions, and discussing new practices.
- Interaction – Pairs work collaboratively and treat the work as a joint endeavor.
- Predictability – Pairs rely on predictable and known criteria and methods.
- Reciprocity – Pairs acknowledge one another’s experience and knowledge.

For each of these principles, the project found that the advisors should take the lead in initiating discussions around them. The author says that both teachers and advisors liked the idea of establishing leadership roles for teacher advisors, but that they were most comfortable with facilitation. The author proposes teacher advisors ride the line between leadership and facilitation but does not suggest ways to do so.

**Little, J. W. (1993). *Teachers’ professional development in a climate of educational reform (NCREST reprint series)*. New York, NY: National Center for Restructuring Education, Schools and Teaching, Teachers College, Columbia University.**

*Highlights:*

- The author proposes teacher networks as an alternative to skill-based professional development workshops.
- Some teacher collaboratives, networks, and subject matter associations have improved teacher engagement by providing incentives for collaboration and partnerships with industry professionals.
- The author proposes six principles by which to measure professional development.

Little argues that educator professional development focused on technical classroom skills does not do enough to further the goals of contemporary reform initiatives. She addresses reforms focused on subject matter teaching, equity, assessments, and social organization of schooling, and the professionalization of teaching, asserting that such reforms require more than skill training, considering that the reforms are grounded in principles, not skills. Little proposes teacher collaboratives, subject matter associations, and other networks as alternatives to traditional professional development, providing anecdotes of networks increasing educator subject knowledge and engagement. The author discusses collaboratives that provided incentives and opportunities for teachers to collaborate and partner with industry professionals with the aim of deepening subject knowledge and engagement. She also outlines six principles of professional development she believes will increase teacher motivation. She states that effective professional development

1. Offers meaningful intellectual, social, and emotional engagement with ideas, with materials, and with colleagues both in and out of teaching.
2. Takes explicit account of the contexts of teaching and the experience of teachers.
3. Offers support for informed dissent.
4. Places classroom practice in the larger contexts of school practice and the educational careers of children.
5. Prepares teachers (as well as students and their parents) to employ the techniques and perspectives of inquiry.

6. Ensures bureaucratic restraint and a balance between the interests of individuals and the interests of institutions.

Principle 5 references the effect professional development can have on student engagement, but Little does not otherwise address student outcomes.

**Liu, P. (2017). Transforming turnaround schools in China: A review. *School Effectiveness and School Improvement*, 28(1), 74–101.**

*Highlights:*

- This literature review discusses the strategies and challenges of turnaround schools in China.
- The author discusses six approaches adopted by the Chinese Educational Administration to improve the condition of turnaround schools.

This literature review examines the purpose of turnaround schools in China and identifies methods that Chinese education authorities adopted to improve practices of these schools:

1. Realizing equality in school funding allocation – The author suggests that establishing a special fund to invest in low-performing schools would be more equitable than the current practice of allocating funds based on enrollment.
2. Building up the capacity of turnaround schools by merging them with successful schools – This method is intended to support long-term development of turnaround schools and to meet short-term goals. Recently, Chinese education administrators have attempted a new transformative method called the “mandatory system” to establish a relationship between turnaround schools and social agencies.
3. Improving the teaching force – Through motivation, using experienced teachers, and providing enhanced educator training, China is attempting to improve the quality of the educator workforce.
4. Simultaneous standardization and specialization – The author suggests standardizing schools to ensure they meet basic criteria but specializing resources and metrics of turnaround schools to ensure their success.
5. Community support – Chinese education administrators are encouraging community engagement to increase support and opportunities for turnaround schools.
6. Improving the quality of school principals – The author recommends assigning experienced and skillful administrators to struggling schools.
7. Monitoring the progress of turnaround schools – The Chinese Educational Administration has a timeline and evaluation system to assess the progress of turnaround schools.
8. Focusing on student development – Turnaround schools need to focus on student development, including metacognitive and social skills.

Although efforts by the Chinese Educational Administration have resulted in great improvements to the transformation of turnaround schools, lack of financial resources, little concern for improvement of turnaround schools, and outdated ideology hinder progress.

**Louis, K. S. (2016). Teachers’ capacity for organizational learning: The effects of school culture and context. *School Effectiveness and School Improvement*, 27(4), 534–556.**

*Highlights:*

- School culture, encompassing student support and trust among students and teachers, positively influences teacher capacity for organizational learning.

School level is associated with teacher capacity for organizational learning, but school size and socioeconomic status are not strongly correlated with capacity for organizational learning.

This empirical study examines the effects of school culture on student outcomes and organizational learning. The authors identify characteristics of school contexts that shape organizational learning, such as academic press, academic support for students, trust, and respect. They recommend embedding collaboration practices in schools to influence organizational learning and teacher practice.

The study also found that school level (i.e., elementary, middle, or high) is associated with teachers' capacity for organizational learning. The researchers found no association between size and socioeconomic status of a school and teacher capacity.

**Loxley, A., Johnston, K., Murchan, D., Fitzgerald, H., & Quinn, M. (2007). The role of whole-school contexts in shaping the experiences and outcomes associated with professional development. *Journal of In-service Education*, 33(3), 265–285.**

*Highlight: The authors discuss steps professional development providers, school administrators, and policymakers can take to support sustainability of programs.*

The authors examine interactions between external professional development and school contexts through a study of 247 educators who participated in a school reform program. The authors consider school environment in terms of size, level, socioeconomic status, collaboration, adaptability, and leadership structures. Based on this study and literature, the authors suggest that professional development programs ensure sustainability by incorporating principal training and support and adapting to school contexts. Furthermore, schools can support professional development sustainability by

- establishing supportive middle-management structures, such as curriculum coordinators;
- working with professional development facilitators to ensure relevancy to teachers;
- encouraging teachers to contextualize the lessons they learn;
- offering differentiated support through teacher leaders;
- prioritizing time for professional development; and
- reconceptualizing the school day and year.

The latter two points will be easier said than done unless policymakers provide necessary resources for extending teachers' workdays or years.

**Mindich, D., & Lieberman, A. (2012). *Building a learning community: A tale of two schools*. Stanford, CA: Stanford Center for Opportunity Policy in Education.**

*Highlight: Establishing professional learning communities requires leadership, resources, and processes such as norm setting.*

This report explores factors that contribute to the development of professional learning communities (PLCs) based on surveys of 33 public high school administrators and case studies of two of the schools. Based on interviews and observations at the two sites, supported by survey data, the authors assert that launching professional learning communities requires the following:

- Leaders willing to take a risk

- Distributed leadership
- Norm setting
- Collegial relationships
- Time for collaboration

The authors recognize that each of the listed factors can pose challenges and discuss how the case study schools addressed them.

**Mizell, H. (2010). *Why professional development matters*. Oxford, OH: Learning Forward.**

*Highlight: The author briefly responds to common questions about professional development in schools, including its purpose, effectiveness, and outcomes.*

The author briefly responds to common questions about professional development. He starts with the basics, such as its purpose and what it looks like, before discussing what makes professional development effective, what schools and districts can do to facilitate opportunities, and outcomes of meaningful professional development. To make sure professional development is effective, Mizell recommends thoughtful planning, which should include using achievement data to identify problems and organizing teachers into onsite teams that pursue specific goals. He offers ideas for how schools can ensure time for professional development and collaboration, such as using substitute teachers or offering stipends for work performed outside the school day. The author concludes by arguing that schools with ongoing professional development are more focused and have more effective teachers.

**Nikolova, N., & Stefanova, E. (2012, October). *Inquiry-based science education in secondary school informatics: Challenges and rewards*. Paper presented at the International Symposium on Innovation and Sustainability in Education, Thessaloniki, Greece.**

*Highlight: The authors provide conditions to be met to support implementation of inquiry-based learning, including the backing of stakeholders and supporting structures.*

Based on comparisons of student and teacher successes and challenges in open- and guided-inquiry classrooms, Nikolova and Stefanova argue the following conditions must be met to support the implementation of inquiry-based learning in a school:

Schools must

- establish teams to facilitate the implementation of the instructional approach, and
- have the support and understanding of parents.

Teachers must

- be open to inquiry-based learning and confident in their abilities,
- be confident in the abilities of their students,
- have opportunities to collaborate, and
- have the support of school leaders.

The authors added that inquiry-based instruction should be integrated into the entire school to ensure sustainability and systematic use.

**Riches, V. C., Harman, A. D., Keen, D., Pennell, D., Harley, J. H., & Walker, M. (2011). Transforming staff practice through active support. *Journal of Intellectual and Developmental Disability, 36*(3), 156–166.**

*Highlight: A train-the-trainer model successfully improved engagement among trainees and instigated the implementation of structures to support their work.*

This study evaluated the effects of a train-the-trainer model in which five apprentices were trained to provide support training to 119 group home staff members. Questionnaires were used to evaluate trainee experiences, data were collected before and after to assess outcomes, and a staffing survey was used to examine staffing levels, turnover, and challenges. Trainees reported enjoying the training and feeling more engaged. As a result of the training, trainees reported decreased levels of depression, improved communication among the staff, and the establishment of new mechanisms for setting, monitoring, and achieving goals in their workplaces.

**Sandholtz, J. H., & Ringstaff, C. (2013). Assessing the impact of teacher professional development on science instruction in the early elementary grades in rural US schools. *Professional Development in Education, 39*(5), 678–697.**

*Highlight: This study examines the longitudinal effects and sustainability of a three-year professional development program, including an increase in teacher content knowledge.*

This study investigated the sustained impact of a three-year teacher professional development program on teacher science knowledge, self-efficacy, and instructional practices. The authors found that the program prompted changes in instruction and improved educator content knowledge and self-efficacy in both the short and long term. Teachers also adopted more student-centered approaches and drastically increased integration of science into other subjects. The authors assert that multiyear programs are valuable to teacher professional development, allowing educators to participate in networking and collaboration as well as to make connections between the professional development and their own instruction.

**Scher, L., & O'Reilly, F. (2009). Professional development for K-12 math and science teachers: What do we really know? *Journal of Research on Educational Effectiveness, 2*(3), 209–249.**

*Highlights:*

- This paper explores the current research base on the effects of K–12 math and science professional development programs on student learning, finding little evidence to support a causal relationship.
- The authors propose a theoretical framework for designing studies to examine mechanisms through which professional development programs influence teacher knowledge, practices, and student achievement.

This paper examines empirical evidence of the effectiveness of math and science professional development in improving student outcomes. In this analysis, multiyear, math-focused interventions were more effective than single-year programs, but it was not clear to the researchers whether this holds true to science-focused interventions. Programs focusing on math or science were more effective than those trying to address both, and programs that incorporated content and pedagogy were more effective than those incorporating one or the other.

The authors recommend more research into the relationships between professional development and student outcomes and warn against making broad claims about the effectiveness of professional development programs.

**Senge, P. M. (1996). *Leading learning organizations. Training & Development, 50(12), 36–37.***

*Highlight: The author describes different types of leadership necessary to a successful learning organization.*

Senge describes three different types of leaders he argues are essential to strong organizations:

- Local line leaders test new ideas to find best practices and train others in adopting learning culture behavior. They manage departments or units and have a high level of autonomy.
- Executive leaders support line leaders, develop infrastructures for professional learning, and model learning culture behavior.
- Internal networkers/community builders seek out those who are instrumental in changing organizational culture, assist local line leaders, and spread information. They are not necessarily in a position of official authority.

He addresses the challenges in engaging each type of leader, such as skepticism, traditional concepts of leadership, and issues in identifying people for such leadership roles. Although he explains why each type of leader is necessary, he does not discuss the effects of such leadership, assuming readers already know why they need a learning organization.

**Spillane, J. P., Kim, C. M., & Frank, K. A. (2012). *Instructional advice and information providing and receiving behavior in elementary schools: Exploring tie formation as a building block in social capital development. American Educational Research Journal, 49(6), 1112–1145.***

*Highlight: This study suggests that educators' shared demographic characteristics are associated with the sharing of information and advice, but that formal organizational structures (such as grade-level assignment and leadership designations) are more strongly associated with information sharing than individual characteristics.*

This study investigated the effects of organizational structure and individual characteristics on social ties among educators in elementary schools, the assumptions being that social ties lead directly to information exchange, and that information exchange is a necessary component of a successful network. The authors measured social ties through surveys of elementary staff members in one midsized U.S. public school district, with 1,210 respondents in 2005 and 1,194 respondents in 2007. Race, gender, and years of experience as a teacher were used to investigate the influence of personal characteristics, and grade taught, number of different grades taught, and designated leadership positions were used to examine the effect of formal organizational structures. Using multilevel models, the authors found that organizational structures are more strongly associated with the acceptance and offering of knowledge and advice than individual characteristics, suggesting that schools (and learning communities) can organize themselves in ways that encourage or inhibit information sharing.

**Szczesiul, S., & Huizenga, J. (2014). *The burden of leadership: Exploring the principal's role in teacher collaboration. Improving Schools, 17(2), 176–191.***

*Highlights:*

- A small qualitative study found that teacher teams were unsatisfied with principals' attempts to facilitate collaboration by dedicating time to meet and providing professional development opportunities.
- Teachers in the study wanted principals to set a vision, provide a framework for addressing instructional issues, and offer meaningful feedback to their efforts.

Using a qualitative study of four professional learning communities, the authors investigate how principals influence structured collaboration. The researchers interviewed, observed, and surveyed teacher teams at two schools over six months. Both schools were predominately White, high-performing, and served middle- to upper-middle-class families. They were chosen because administrators at both sites encouraged collaboration through professional development opportunities and by allocating time for collaboration during the school day.

The researchers found that the teacher teams appreciated the dedicated time for collaboration but wanted the principal to set a vision that would guide their work. In addition to a lack of direction, teachers believed that this contributed to uncertainty about how to address instructional questions and problems. Teams did submit reports to principals about tools and practices they implemented, but a lack of feedback left them unsure about how to continue and how they were performing.

The authors highlight that allocating collaboration time and providing professional development opportunities were not enough to establish a supportive, collaborative culture. Teachers wanted principals to provide guidance and meaningful feedback. Resources are a key component to meaningful change, but are intended to support a vision, not function alone.

**Thoonen, E. E., Slegers, P. J. C., & Oort, F. J. (2012). Building school-wide capacity for improvement: The role of leadership, school organizational conditions, and teacher factors. *School Effectiveness and School Improvement*, 23(4), 441–460.**

*Highlights:*

- Longitudinal data from 32 schools indicate that aspects of school improvement capacity can improve over time, especially leadership behavior and practice. The researchers suggest that leadership may be the driver for other schoolwide change.
- The authors did not see a change in teacher engagement and motivation over the course of the study.

This study uses longitudinal data from teachers at 32 primary schools to investigate whether and how school improvement capacity is developed and maintained. Over six years, a total of 1,010 teachers were surveyed, but 398 of them were surveyed only once. They all taught in schools where school boards had demanded increased improvement capacity without recommending specific programs. The surveys measured school improvement capacity through leadership practices, school organization, school culture, teacher development, and teacher motivation.

Survey results suggest that school leaders developed their skills over the course of the study, including vision building and individualized support. However, the researchers note that some school leaders were replaced and that legislation may have influenced leadership practices. Teacher engagement and motivation did not significantly change. The authors suggest that transformational leadership may be a prerequisite for building other aspects of school improvement capacity, noting that they improved before school organization and culture did.

**Varga-Atkins, T., Qualter, A., & O'Brien, M. (2009). School professionals' attitudes to professional development in a networked context: Developing the model of 'believers, seekers, and sceptics.' *Professional Development in Education*, 35(3), 321–340.**

*Highlight: The authors categorize educators based on their perceptions of continuing professional development (CPD) and discuss steps that school, district, and program leaders can take to improve motivation to participate in CPD.*

The authors assert that educators' attitudes toward continuing professional development (CPD) can be influenced by the relevance and variety of accessible professional development, and that their attitudes affect their decisions to participate in CPD. Two hundred fifty-three educators completed surveys and questionnaires on their perception of a CPD program. Researchers found positive correlations between attitude toward CPD and relevance and variety of professional development activities, and between CPD attitude and the amount of previous CPD experience. On the other hand, participants who had positive feelings toward CPD reported it to be more varied and relevant.

Based on survey and questionnaire responses, the researchers categorized the participants as providers, believers, seekers, agnostics, and skeptics:

- Providers are enthusiastic about CPD and seek to develop skills in others.
- Believers perceive a clear benefit to CPD and seek to participate in professional development opportunities. They appreciate the opportunity to share knowledge and practice.
- Seekers value CPD but believe there should be more opportunities available.
- Agnostics believe CPD may be valuable, but do not see a clear benefit. They appreciated opportunities to collaborate, but perceived barriers to effective collaboration in CPD, such as time constraints.
- Skeptics view CPD as a burden. They do not perceive a value in collaborative CPD.

To increase professionals' motivation to participate in continuing professional development, the authors suggest

- increasing access to and the variety of professional development opportunities,
- offering opportunities to participate in small networked communities,
- providing and prioritizing time for professional development,
- leveraging providers as facilitators of collaboration and professional development.

**Wermke, W. (2011). Continuing professional development in context: Teachers' continuing professional development culture in Germany and Sweden. *Professional Development in Education*, 37(5), 665–683.**

*Highlights:*

- A questionnaire of Swedish and German teachers indicated that they view collaborating with peers, Internet resources, and literature to be the most important sources of continuing professional development (CPD).
- Respondents argued against professional development that was focused on standardized tests or primarily subject-oriented or pedagogical in nature.
- Although respondents were uncomfortable with superintendents driving professional development, they supported principals and schools dictating CPD and agreed that teachers should coordinate their professional development.

The authors report on the results of a questionnaire of Swedish and German secondary teachers ( $n = 418$ ) on continuing professional development (CPD). The survey was designed to examine teachers' perceptions of different sources of CPD and their beliefs about how school contexts should influence professional development. Respondents generally rated collaborating with peers as the most important aspect of CPD and their colleagues as the most trustworthy source of professional development. Internet resources, textbooks, and journal articles were also rated as important sources of CPD by teachers from both countries. In Sweden, where universities are common sources of CPD, teachers considered them to be important sources, too. Teacher unions were not considered important sources of CPD by teachers of either country.

Respondents generally did not believe that standardized tests should drive professional development or that subject-oriented or pedagogical CPD was most necessary. They disagreed that superintendents should direct CPD, but were comfortable with principals, schools, and universities dictating teachers' CPD. Respondents generally agreed that educators should coordinate their CPD with each other and that they would prefer open curricula.

## II. Increased Academic Achievement or Educator Outcomes

*This section includes empirical studies, a synthesis of research, and a meta-analysis. These articles explore the effects of teacher training and instructional strategies on student outcomes, teacher content knowledge, professional capital, and/or pedagogical skills. Much research is focused on inquiry-based instruction, but these annotations seek to examine the specific mechanisms for improved student achievement rather than citing broad instructional approaches.*

**Angrist, J. D., & Lavy, V. (2001). Does teacher training affect pupil learning? Evidence from matched comparisons in Jerusalem public schools. *Journal of Labor Economics*, 19(2), 343–369.**

### *Highlights:*

- This study explores a weekly in-service intervention program and its outcomes, including increased reading and math scores in secular elementary schools.
- The authors suggest that frequent in-service training can be more effective and less costly than other measures designed to remedy low achievement, such as adding school hours and reducing class sizes.

The authors used a matched-comparison design to examine the effects of in-service teacher training on elementary student achievement. An intervention program provided a low-achieving school district in Jerusalem with funding for weekly external training for all reading and math teachers. For the two years in the study, comparison group schools did not see statistically significant changes in students' math or reading achievement. In the same time period, student achievement increased substantially in secular treatment schools. Furthermore, the authors estimate that the in-service training was more cost effective than cutting class sizes or adding hours to the school day would have been. Religious schools in the treatment group, which were exposed to the program later and offered only a small sample size, had inconclusive results.

**Antoniou, P., & Kyriakides, L. (2011). The impact of a dynamic approach to professional development on teacher instruction and student learning: Results of an experimental study. *School Effectiveness and School Improvement*, 22(3), 291–311.**

*Highlights:*

- A dynamic integrated approach to professional development had a positive effect on teaching skills, while a reflection-based professional development program did not.
- Students whose teachers were exposed to the dynamic integrated approach outperformed their peers whose teachers participated in the holistic approach.
- The authors also found that teaching skill had a positive impact on student outcomes, but that teaching experience was associated with improved student outcomes only insofar that more experienced teachers tend to have better teaching skills.

This study used pretests and posttests to compare the effects of a dynamic integrated approach and a holistic approach to teacher professional development on teaching skills and student outcomes. Teachers ( $n = 130$ ) were randomly assigned to one of the two groups. The authors describe self-reflection as the predominant characteristic of the holistic approach. A dynamic integrated approach was built with five levels for teachers to ascend. They begin with teacher-centered approaches and move toward active student involvement. The final levels require teachers to differentiate instruction and lead modeling and orientation tasks. Teachers in both groups attended nine professional development sessions.

Data were collected through classroom observations, standardized tests, and student and teacher surveys. 2,356 students were included in the study. Using the Rasch model, researchers determined that teachers who participated in the dynamic integrated professional development improved their teaching skills, whereas teachers exposed to the holistic approach did not. This held true regardless of amount of teaching experience. Analysis of student outcomes revealed that teaching skill, as measured using the Rasch model, had an impact on student learning whereas amount of teaching experience only had an impact when skill was not part of the equation. Students of teachers exposed to the dynamic integrated approach outperformed their peers who were taught by those in the holistic approach group.

**Chu, K. W. S. (2009). Inquiry project-based learning with a partnership of three types of teachers and the school librarian. *Journal of the Association for Information Science and Technology*, 60(8), 1671–1686.**

*Highlights:*

- A collaborative approach to project-based learning improved dimensions of learning and had a positive effect on project grades.
- Researchers found a linear relationship between students' enjoyment and reading and writing skills, information literacy, subject knowledge, and communication skills.

This study evaluated a collaborative, inquiry-based, project-based learning approach by comparing the outcomes of primary students in treatment and comparison groups. In the comparison group, students completed a project under the supervision of their general studies teacher. In the treatment group, students were supported by a collaborative team that included their general studies teacher, language teacher, librarian, and an information technology teacher, who collaboratively focused on improving eight dimensions of learning, defined as presentation, research, reading, writing, IT, and social skills, as well as subject knowledge and information literacy.

Using project grades and student, parent, and teacher surveys and interviews, the researchers measured academic performance, dimensions of learning, and student enjoyment. Project grades for the students in the treatment group were significantly higher than those in the comparison group,

and surveys and interviews indicated that their learning dimensions had significantly improved as a result of the piloted instructional approach. Students, parents, and teachers reported that students enjoyed the approach, and researchers found linear relationships between enjoyment and information literacy, subject knowledge, and literacy and communication skills.

The authors' findings suggest that staff collaboration is an effective tool for coordinating efforts to improve students' cognitive and metacognitive skills, including social skills and initiative to learn, and that students perform best when they are engaged in enjoyable work.

**Courtney, J. (2007). What are effective components of in-service teacher training? A study examining teacher trainers' perceptions of the components of a training programme in mathematics education in Cambodia. *Journal of In-service Education*, 33(3), 321–339.**

*Highlights:*

- Participants in a train-the-trainer program perceive teacher observations, learning new strategies, and sharing ideas as the most valuable aspects of their professional development.
- Training elevated trainers' professional statuses in their own eyes and those of teachers and site administrators.

Through observations, interviews, and journal entries, the authors examine components of a train-the-trainer program that participants perceived as having the greatest impact. Teacher trainers from 138 schools participated in the professional development, which was intended to improve mathematics instruction. The most appreciated components of the professional development program were

- teacher observations,
- learning new instructional strategies, and
- time for discussion and sharing of ideas.

Although trainers appreciated being able to communicate with expert consultants, training manuals were less valued. Authors suggest that allowing trainers to participate in the development of manuals might increase trainer ownership and the utility of the manuals.

The researchers also found that trainers' professional statuses were viewed as higher by teachers and administrators, and by trainers themselves. Program participants asserted that supporting teachers allowed them to reflect and improve on their own practice and made them more aware of issues teachers face.

**Dogan, S., Pringle, R., & Mesa, J. (2016). The impacts of professional learning communities on science teachers' knowledge, practice and student learning: A review. *Professional Development in Education*, 42(4), 569–588.**

*Highlights:*

- The authors review studies on the impacts of professional learning communities on science teachers' content knowledge and practice, determining that they can have an effect.

The authors review empirical studies of the impact of professional learning communities (PLCs) on science teachers' content and pedagogical knowledge. Peer-reviewed articles on collaborative, ongoing professional learning communities that identified effects on teachers' knowledge and

practice were included. The authors found 14 articles that met these criteria. Thirteen were based on self-reported data.

In six of these studies, researchers found that PLCs were components of effective professional development, but only half asserted that teacher practice changed as a direct result of engagement in PLCs. Six others examined PLCs independent of a larger professional development or reform program and found them to be effective in changing teacher practice. The remaining two studies did not consider the effects of PLCs on teacher practice. Even for the nine articles that indicated PLCs affect teacher practice, “changes were alluded to without giving specific evidence” (p. 577). Nine of the fourteen studies examined the effect of PLCs on teacher knowledge, with seven reporting an increase in content knowledge and one reporting an increase in leadership skills. The authors surmise that PLCs can be an effective method of improving teacher science practice and content knowledge.

**Furtak, E. M., Seidel, T., Iverson, H., & Briggs, D. C. (2012). Experimental and quasi-experimental studies of inquiry-based science: A meta-analysis. *Review of Educational Research*, 82(3), 300–329.**

*Highlights:*

- Through this meta-analysis, the authors found that studies contrasting inquiry-based learning with and without epistemic domains of inquiry had the highest effect sizes; studies contrasting inquiry-based learning with and without social domains were the most common but had the lowest effect sizes.
- When comparing student-led inquiry-based learning, teacher-led inquiry-based learning, and traditional teaching strategies, the authors found the greatest difference between teacher-led inquiry and traditional teaching strategies.

This meta-analysis explores the effects of inquiry-based teaching on student learning using a model of inquiry-based teaching to examine experiments and quasi-experiments focusing on standard K–12 science education, including only those studies that reported pretest and posttest data for control/comparison and treatment groups. The authors did include studies that reported insufficient data if their authors responded to requests for additional data. Searching a ten-year period (1996–2006), the authors found only 22 articles reporting 37 distinct studies. The authors note that only four of the papers explicitly used the term “inquiry-based” to describe their studies; others used terms such as “cooperative learning, problem solving, discovery learning, instructional support, investigative approach, and constructivist learning” (p. 315). To analyze the studies, the authors developed a framework with four components: conceptual, procedural, epistemic, and social.

Contrasting control/comparison and treatment groups based on the four components and using Glass’s  $\Delta$ , the authors found mean effect sizes were highest for studies that contrasted epistemic domains of inquiry (0.75,  $SD = 0.19$ ), followed by those that contrasted procedural, epistemic, and social domains of inquiry (0.72,  $SD = .61$ ). The lowest effect size was for studies that contrasted only social domains (0.11,  $SD = 0.43$ ), yet this was the most common situation.

Contrasting student-led inquiry-based learning, teacher-led inquiry-based learning, and traditional teaching conditions, the authors found the greatest contrast between traditional and teacher-led reform ( $ES = 0.65$ ,  $SD = 0.57$ ) followed by traditional and student-led reform ( $ES = 0.25$ ,  $SD = 0.45$ ). Studies that compared student-led and teacher-led reform had a mean effect size of 0.01 ( $SD = 0.03$ ).

The authors called for additional experiments and quasi-experiments of inquiry-based teaching. They additionally advocated for data standards for publication of studies, frustrated with the number of studies that would have been selected, but did not report sufficient data.

**Heck, R. H., & Moriyama, K. (2010). Examining relationships among elementary school contexts, leadership, instructional practices, and added-year outcomes: A regression discontinuity approach. *School Effectiveness and School Improvement, 21(4)*, 377–408.**

*Highlights:*

- This study examines the relationships between and among school context, school composition, leadership, instructional practices, and student outcomes.
- Improvement-focused school leadership was positively correlated with improved instructional practices, and instructional practices were positively correlated with added-year outcomes.

This study tests a theoretical model of how school context, composition, and staffing-related variables interrelate with school leadership, instructional practices, and student outcomes in elementary schools. Students were assigned to treatment and control groups and student outcomes were analyzed using a regression-discontinuity design. The authors assert that regression-discontinuity design is an equitable method of assessing school effects on student achievement. Additionally, the study validated the relevance of school leadership in facilitating school improvement through the development of instructional practices.

**Houtveen, A. A. M., & van de Grift, W. J. C. M. (2007). Effects of metacognitive strategy instruction and instruction time on reading comprehension. *School Effectiveness and School Improvement, 18(2)*, 173–190.**

*Highlights:*

- A professional development program on metacognitive strategy instruction for reading comprehension improved students' metacognitive abilities and reading comprehension.
- The authors list metacognitive skills for reading comprehension and share metacognitive-focused teaching strategies to improve reading comprehension.

The authors evaluate the effectiveness of a professional development program on metacognitive strategy instruction on students' reading comprehension. Treatment ( $n = 344$ ) and control groups ( $n = 225$ ) were subject to pretests, posttests, and follow-up tests designed to measure their metacognitive abilities in reading comprehension. Instruments measured implementation fidelity, students' reading comprehension skills, students' metacognitive knowledge, and student intelligence, the latter using the Snijders–Oomen Nonverbal Intelligence Test. Students in the treatment group outperformed their peers on the metacognitive skills posttest, with a corrected effect size of .36 (Cohen's  $d$ ), and on the reading comprehension follow-up test, also with a corrected effect size of .36, a medium effect.

The authors list some metacognitive skills and strategies relevant to reading comprehension, including

- drawing from prior knowledge,
- understanding the organization of the text,
- making predictions,
- selective reading, and
- confirming comprehension.

Furthermore, they suggest several teaching strategies to improve student's reading comprehension, such as

- explicitly explain relevant metacognitive skills when opening an activity,
- motivate students to use these skills,
- increase students' independence over the course of an activity,
- use formative assessments to monitor student learning, and
- "place reading comprehension in an authentic context" (p. 187).

**Jacob, B. A., & Lefgren, L. (2004). The impact of teacher training on student achievement: Quasi-experimental evidence from school reform efforts in Chicago. *The Journal of Human Resources*, 39(1), 50–79.**

*Highlights:*

- This study found that providing low-performing Chicago elementary schools with additional resources, including funding for professional development, did not have an effect on student achievement.
- The authors assert that future attempts to improve instruction and student achievement should align with other practices in the school and/or district.

This quasi-experiment used a regression discontinuity approach to examine the effect of school reform efforts in Chicago on elementary students' math and reading achievement. Schools with especially low standardized reading exam scores were provided with technical assistance, progress monitoring, and additional funding to purchase staff development services from external organizations including universities, consultants, and nonprofits. Business manager interns were also provided to take on some of the operational work of principals so they could focus on educational improvement. The researchers used low-achievement schools that barely missed the cutoff for additional funding as a comparison group, arguing that they had the same incentives to improve (avoiding sanctions).

Although teachers participated in more and higher-quality professional development activities, there was no effect on student achievement, even when students were disaggregated by race, gender, socioeconomic status, and ability. The authors suggest that the reform might have been effective if it was more structured and aligned with other school and district goals and curriculum, or if it was complemented with direct services to students.

**Jacob, R., Hill, H., & Corey, D. (2017). The impact of a professional development program on teachers' mathematical knowledge for teaching, instruction, and student achievement. *Journal of Research on Educational Effectiveness*, 10(2), 379–407.**

*Highlights:*

- A professional development program was generally unsuccessful in improving student and educator content knowledge and teacher practice.
- The authors suggest the program may have been more effective if implementation fidelity was higher or the professional development did more to connect instructional practice to content knowledge.

Using treatment and control groups, this study evaluates the effectiveness of a professional development program designed to improve teacher content knowledge, use of formative

assessments, and instruction. Teachers were randomly assigned to a treatment group, in which they participated in a summer institute and workshops throughout the school year and were given resources with suggested lesson plans. The control group did not participate in the math program but had the opportunity to join a science professional development program as an incentive to participate in the study. The program began with 105 teachers, but 48 dropped by the end of the third year. Teacher surveys, observations, and teacher and student assessments were used to evaluate implementation fidelity and measure educator and student outcomes.

The authors judge implementation fidelity as high the first year, but lower in the following years due to changes in staffing, district leadership, standards, and assessments and lower rates of participation in the summer institute. Although teachers reported that they learned a lot from and were satisfied with the professional development, they did not report improved math knowledge, instruction, or student outcomes. The authors suggest that they may have been more critical of their practice as a result of the professional development. Educators performed statistically better on number and operations items on the educator assessment (effect size = .32) in the second year, but not in the third. There were no statistically significant differences between the control and treatment groups' geometry scores. Further findings do not suggest statistically significant differences in teachers' quality of instruction or student achievement.

The authors discuss the low fidelity of implementation in Years 2 and 3 as a possible explanation for the lack of effects, but also suggest that the professional development program did not sufficiently link pedagogical practice to content knowledge.

**Johansson, S., Strietholt, R., Rosén, M., & Myrberg, E. (2014). Valid inferences of teachers' judgements of pupils' reading literacy: Does formal teacher competence matter? *School Effectiveness and School Improvement*, 25(3), 394–407.**

*Highlights:*

- The researchers found that teachers with higher competence levels were better judges of their students' reading achievement.
- In this study, student reading test scores only accounted for 50% of variance in teacher perception of student achievement.

This study uses multilevel structural equation modeling to investigate the relationships between teacher competence, student reading achievement, and teacher perceptions of student reading achievement. The researchers used the Progress in International Reading Literacy Study (PIRLS) to measure Grade 3 student reading achievement ( $n = 5,271$ ) and teachers' judgments of their student's reading skills ( $n = 351$ ). Teacher competence was based on type of formal training, teaching certification, years of experience teaching the third grade, and training in reading pedagogy.

Analyses indicate that student test scores explain approximately 50% of variance in teachers' perceptions of their reading achievement. Although this varies across classrooms, teachers with higher competence levels tend to be better judges of student achievement. The researchers were surprised to find a lower correspondence between student achievement and teacher judgment in high-performing classes than in low-performing classes, but this did not hold true when the bottom 5% of classes were excluded from the analysis.

**Kahle, J. B., Meece, J., & Scantlebury, K. (2000). Urban African-American middle school science students: Does standards-based teaching make a difference? *Journal of Research in Science Teaching*, 37(9), 1019–1041.**

*Highlights:*

- Students with more exposure to instructional strategies such as problem solving and extended inquiry scored higher on a standardized test.
- This study found a correlation between student achievement and student attitude.

The authors studied the effects of standards-based teaching practices on African American middle school students in urban settings using comparison and treatment groups. Standards-based teaching practices were defined as extended inquiry, problem solving, group projects, and open-ended questioning. Teachers for students in the treatment groups had participated in a standards-based professional development institute. Standardized tests measured academic achievement and questionnaires measured student attitude and teachers' use of standards-based teaching practices. Unsurprisingly, students in the treatment group tended to report that their teachers used standards-based teaching practices more frequently than the comparison group reported, but this was not true for all teachers. The study did not find a teacher's professional development experience to be a significant predictor of students' science achievement, but found such a correlation when they compared teachers who frequently employed standards-based teaching practices, especially for boys. This study also found a significant correlation between student attitude and achievement.

**Ku, K. Y. L., Ho, I. T., Hau, K. T., & Lai, E. C. M. (2014). Integrating direct and inquiry-based instruction in the teaching of critical thinking: An intervention study. *Instructional Science*, 42(2), 251–269.**

*Highlight: In this study, students who experienced direct and inquiry-based instruction improved critical-thinking skills and their ability to apply knowledge from one subject to another, although students with low critical-thinking skills benefited most from direct instruction.*

This empirical study compared direct, inquiry-based, and balanced modes of instruction to examine their impact on students' critical thinking and transfer of knowledge abilities. Three experimental groups participated in an intervention program for the same amount of time (18 hours total) and with the same materials. Group A received primarily direct instruction, Group C received primarily inquiry-based instruction, and Group B received a balance of direct and inquiry-based instruction. Based on pretests and posttests, all experimental groups generally improved their critical-thinking skills, but students who scored lower on the pretests benefited the most from direct instruction and students who scored higher benefited the most from the balanced approach. Additionally, Group B was the only one to improve in both critical-thinking skills and the ability to transfer knowledge between subjects. This study highlights the importance of varying instructional strategies in order to benefit all learners.

**Liu, O. L., Lee, H. S., & Linn, M. C. (2010). Multifaceted assessment of inquiry-based science learning. *Educational Assessment*, 15(2), 69–86.**

*Highlights:*

- Students perform better when taught by experienced teachers.

- Students perform better when taught by teachers who are supported through professional development or collaboration opportunities.

As part of an effort to develop inquiry science units, the authors examined how teacher characteristics affect student science learning. Their study emphasizes the importance of teacher experience and support, suggesting that schools should strive to retain teachers and provide opportunities for them to develop their skills. Specifically, the study found that students of teachers who taught for six or more years outperformed their peers on assessments, regardless of the instructional approach they experienced. They also found that students of partnered teachers and those with colleagues teaching the same unit at their school scored higher on standardized tests.

**Louis, K. S., Dretzke, B., Wahlstrom, K. (2010). How does leadership affect student achievement? Results from a national US survey. *School Effectiveness and School Improvement*, 21(3), 315–336.**

*Highlights:*

- Surveys of U.S. teachers suggest that focused instruction, professional learning communities, and teachers' trust in the principal are associated with student math achievement.
- The authors found shared leadership and instructional behaviors to be indirectly related to student achievement.
- Shared leadership had a stronger relationship with student achievement in elementary schools than in secondary schools.

The authors used 2005 and 2008 national surveys of elementary and secondary teachers to investigate the effects of leadership behavior on teacher collaboration and practice and student outcomes. Leadership behavior, in this context, encompasses instructional leadership, shared leadership, and trust among educators. The researchers found that focused instruction, professional learning communities, and trust in the principal were significantly associated with student math achievement. Using structural equation modeling, the authors found that shared leadership and instructional behaviors were indirectly related to student achievement. The authors did not identify which instructional behaviors might have the greatest impact on student achievement. The authors theorize that leadership behaviors affect professional learning communities, which may have a more direct impact on student outcomes. The research also found that shared leadership has a stronger relationship with student achievement in elementary than secondary schools.

The authors conclude by arguing that educators need to recognize the value of shared work and knowledge, secondary school leaders need additional support when implementing reforms to improve student outcomes, trust is an important aspect of leadership, and focus should be on instructional and shared leadership rather than principal leadership.

**Marshall, J. C., & Alston, D. M. (2014). Effective, sustained inquiry-based instruction promotes higher science proficiency among all groups: A 5-year analysis. *Journal of Science Teacher Education*, 25(7), 807–821.**

*Highlights:*

- A professional development program that provided several opportunities for support was successful in improving teacher practices, as indicated by student standardized test scores.
- This inquiry-based program was successful in improving student comprehension of both science practices and science concepts.

This quasi-experimental study examined student outcomes of a five-year professional development project intended to increase and improve inquiry-based instruction. The project included summer interactions, group follow-up meetings, classroom observations, and personalized support as needed. In addition to improving their own instructional practices, participants were expected to implement initiatives that would expand inquiry-based teaching in their school or district.

Each fall and spring, students took the Measure of Academic Progress (MAP) science test to assess student achievement and retention of science practices and concepts.

Student data were disaggregated by students of nonparticipant teachers, first-year participants, second-year participants, and third-year participants. Results indicated that students of participating teachers earned proficient scores more often than those of nonparticipants, and that they outperformed their peers in terms of science practices and science concepts. The authors also found growth in teachers' first and second years (the third year was omitted from the analysis due to significantly different pretest scores) and a narrowing achievement gap between Hispanic/Latino and Caucasian students.

**Minner, D. D., Levy, A. J., & Century, J. (2010). Inquiry-based science instruction: What is it and does it matter? Results from a research synthesis years 1984 to 2002. *Journal of Research in Science Teaching*, 47(4), 474–496.**

*Highlights:*

- A synthesis of research on inquiry-based learning from 1984–2002 found that experience with the investigative process had a larger association with increased content knowledge than inquiry-based learning programs.
- The authors found that the scientific process is an effective tool for students to learn and retain scientific concepts.

The authors synthesized findings from prior research to determine student outcomes associated with inquiry-based instruction in science classrooms. Analyzing 138 studies from about 18 years, the authors found a majority of studies (51%) reported inquiry-based instruction had a positive impact on students' science content knowledge and retention and found only modest associations between high levels of inquiry-based instruction and student outcomes. However, deeper analyses indicate that investigative skills are clearly associated with increased content knowledge, even when not part of an inquiry-based instructional approach. Investigative skills include hypothesis generation, experimental design, collection of data, and extracting and communicating information. The authors call for more emphasis on the scientific process over pure content knowledge, arguing that the investigative cycle is an effective method for students to gain and retain science concepts.

**National Center for Education Evaluation and Regional Assistance. (2016). *Does content-focused professional development work? Findings from three Institute of Education Sciences studies*. Washington, DC: U.S. Department of Education, Institute of Education Sciences.**

*Highlights:*

- Random assignment studies of three different content-focused professional development programs found no positive effect on student achievement in the first year.
- The studies suggest that content-focused professional development can increase teachers' content knowledge and impact their instructional approaches in the first year.

The report discusses the findings of random assignment studies of three professional development programs, respectively focused on second grade reading, fourth grade mathematics, and seventh grade math. Each program was content-focused, led by external providers, and began with a summer institute and featured meetings and coaching during the school year. Differences between the programs included the balance of content knowledge and pedagogical content knowledge and the amount of time spent on the summer institute, school-year meetings, and in-school coaching.

Two of the three studies found statistically significant positive effects on teachers' content knowledge at the end of the school year and all three found an effect on instructional practice. No study found a statistically significant impact on student achievement at the end of the school year. Concluding that teacher knowledge and practices are not strongly associated with student achievement, the report calls for further research to identify specific professional development practices, instructional approaches, and teacher knowledge that may improve student achievement.

**Parr, J. M., & Timperley, H. S. (2010). Multiple 'black boxes': Inquiry into learning within a professional development project. *Improving Schools, 13*(2), 158–171.**

*Highlights:*

- A two-year project that established professional learning communities and used site-based needs analyses to guide the use of expert facilitators was successful in increasing student literacy outcomes, especially for underperforming students.
- The authors discuss aspects of the project that they believe had the greatest effects on its success.

Using student achievement data, student interviews, teacher interviews, and classroom observations, the researchers evaluated the effects of a professional development project in 302 schools, separated into three two-year cohorts. The project involved a needs analysis at each site that reported back strengths and weaknesses at the leadership, teacher, and student levels. Expert facilitators worked with each school to improve student outcomes, teacher content knowledge, and transfer of knowledge and training to practice as well as to establish professional learning communities.

At the end of the two-year cycles, student literacy achievement increased. The effect sizes (Cohen's *d*) for gains in writing were .79, .62, and .88 for each cohort. The effect sizes (Cohen's *d*) for gains in reading were .28, .28, and .44. Underperforming students (lowest 20%) benefitted significantly more than others from this program, with writing effect sizes ranging 1.81–2.07. The authors attribute the project's success to

- the establishment of learning communities,
- development of shared goals across schools and at different levels,
- expert support for teachers,
- use of student data, and
- collaborative progress monitoring.

**Petridou, A., Nicolaidou, M., & Karagiorgi, Y. (2016). Exploring the impact of professional development and professional practice on school leaders' self-efficacy: A quasi-experimental study. *School Effectiveness and School Improvement, 28*(1), 56–73.**

*Highlight: Questionnaires of new deputy head teachers suggest that leadership training put evaluation theory into perspective, improved evaluation of instructional practice, and helped these inexperienced administrators manage issues as they arose.*

This study explores the impact of a leadership training program on school administrators' self-efficacy. Beginning secondary deputy head teachers ( $n = 170$ ) were assigned to treatment and control groups. Treatment group participants participated in a leadership training program, while control group participants did not. Participants ( $n = 130$ ) completed pretest and posttest questionnaires on perceived self-efficacy beliefs, but 21 questionnaire pairs were excluded due to missing data.

The researchers found statistically significant differences between pretests and posttests of the treatment group only in their self-reported ability to evaluate classroom practices. For the control group, self-efficacy in evaluating classroom practices, monitoring learning, and professional development actually dropped between the pretest and posttest. The authors suggest that the program may have put evaluation theory into perspective for the treatment participants and that control group participants may have become less confident in their abilities as they struggled with issues as new administrators.

**Poekert, P. E. (2012). Teacher leadership and professional development: Examining links between two concepts central to school improvement. *Professional Development in Education, 38*(2), 169–188.**

*Highlights:*

- The authors argue that effective professional development can build teacher leadership, which benefits an entire school through additional professional development for the teacher leaders and their peers. They further suggest that this may have an impact on student achievement.
- The authors discuss aspects of effective professional development and school conditions that foster teacher leadership.

This literature review focuses on the cycle of teacher leadership, which suggests that professional development contributes to distributed teacher leadership, which results in further professional development for the teacher leader and the teacher leader's colleagues. According to the authors, effective professional development that builds teacher leadership is

- collaborative,
- accessible,
- meaningful,
- content-specific,
- sustained, and
- focused on instructional strategies.

Effective professional development itself does not guarantee teacher leadership, according to the reviewers, but there are conditions that cultivate teacher leadership, such as

- a culture of trust, respect, and autonomy;
- supportive school leadership and peers;
- sufficient time and resources for collaboration, added responsibilities, and professional development; and
- systems and structures that facilitate shared decision making.

The authors cite two empirical studies that suggest teacher leadership can influence teacher motivation, which, in turn, affects student outcomes. They call for more research into the indirect effects teacher leaders can have on student achievement.

**Puzio, K., & Colby, G. T. (2013). Cooperative learning and literacy: A meta-analytic review. *Journal of Research on Educational Effectiveness, 6(4), 339–360.***

*Highlight: This meta-analysis found that student literacy outcomes generally improve after interventions that incorporate collaborative and/or cooperative learning.*

This meta-analysis examines the effectiveness of cooperative and collaborative learning interventions on student literacy achievement. The researchers pulled studies that measured the effect of collaborative or cooperative interventions in standard primary and secondary educational settings on reading, vocabulary, and/or comprehension skills. Studies focusing on spelling or grammar outcomes alone were excluded. This inclusion criteria produced 18 studies covering 29 unique cohorts ( $n = 12,286$ ).

Sixteen cohorts reported student reading outcomes after collaborative or cooperative learning interventions, with a mean overall weighted random effect size of .16. Each cohort reported a positive effect size, ranging from .06 to .73. Eighteen cohorts reported reading comprehension outcomes, with a mean overall weighted random effect size .2 and a range of effect sizes from  $-.07$  to .51. Fourteen cohorts reported vocabulary outcomes, with a mean overall weighted random effect size of .22 and a range from .06 to .46.

The authors conclude that cooperative and collaborative interventions generally improve student literacy outcomes but acknowledge that they were unable to extricate cooperative/collaborative learning from general interventions, which often include other instructional components.

**Saunders-Stewart, K. S., Gyles, P. D. T., Shore, B. M., & Bracewell, R. J. (2015). Student outcomes in inquiry: Students' perspectives. *Learning Environments Research, 18(2), 289–311.***

*Highlights:*

- Based on student reporting, this study found that inquiry-based learning increases student ownership of learning and engagement.
- Students in inquiry-based classrooms also reported higher levels of achievement and asserted that they perform better when they are engaged.

This study compared student outcomes as reported by students of classes categorized by level of inquiry. Using an approach focused on student perspective, the authors used student interviews and a questionnaire to determine which outcomes were most reported and most valued by students. Data were disaggregated based on the level of inquiry taught in a class (inquiry, some inquiry, or traditional) as deduced from teacher interviews using Douglas Llewellyn's "Rubric for being an inquiry-based teacher."

Students in the high-inquiry classes were most likely to report outcomes related to cognitive skills and personal responsibility, followed by students in the classes that employed some inquiry techniques. They also reported higher levels of both enjoyment and achievement, which student responses suggest are correlated. Students in all classes reported that they do their best work when they enjoy the subject or the activity. Students in the traditional classrooms tended to describe their teachers as being responsible for providing them with information, but students in the inquiry-based learning classes reported higher levels of personal responsibility in their learning. The authors suggest further that because students in high-inquiry classes were expected to make connections between concepts and the application of knowledge, they felt more ownership over their work. Similarly, "several

students in the most-inquiry group made strong comments about how this class was the only one that they felt was useful and that connected to their real life” (p. 307).

In this study, inquiry-based learning techniques were used to improve student ownership of learning, understanding of the application of knowledge, and enjoyment. Students also reported higher levels of achievement, but researchers did not provide an analysis of tangible outcomes to support the claim.

**Sengupta-Irving, T., & Enyedy, N. (2014). Why engaging in mathematical practices may explain stronger outcomes in affect and engagement: Comparing student-driven with highly guided inquiry. *Journal of the Learning Sciences, 24(4), 550–592.***

*Highlights:*

- This study found equivalent student knowledge gains for students in student-led and teacher-guided instruction.
- Students in the student-led group reported higher levels of enjoyment in their education.

After conducting a study that found equivalent content knowledge gains between students exposed to student-led (“Open”) and teacher-led (“Guided”) instruction focused on the same content for the same amount of time, the authors extended their study to examine why surveys from the Open instruction group reported greater enjoyment of learning. Using video recordings, Sengupta and Enyedy found that students in the Open instruction group were more engaged as evidenced by the amount of time they spent striving “to make mathematical meaning” (p. 552) and using data to draw and support their conclusions. The authors suggest that although they found no difference in student achievement between Open and Guided instruction, Open instruction may be more successful in sustaining disciplinary interest.

**Slavin, R. E. (2013). Effective programmes in reading and mathematics: Lessons from the best evidence encyclopedia. *School Effectiveness and School Improvement, 24(2), 383–391.***

*Highlight: This research synthesis found that instructional process programs, or those that incorporate instructional process, have greater effects on student math and reading outcomes than curriculum- or technology-based programs.*

The authors synthesize research on programs to improve student reading and/or mathematics outcomes, as measured by standardized tests. Only studies with treatment and control groups, pretests and posttests, and durations of at least 12 weeks were included.

Inclusion criteria produced 77 studies on curriculum-based programs, 130 on technology-based programs, and 100 studies on instructional process programs, plus 39 studies on the latter that also incorporated curriculum or technology. The weighted mean effect sizes for curriculum-based and technology-based programs were small: .06 and .11, respectively. Instructional process and combined programs had somewhat larger mean effect sizes of .27 and .26. When disaggregated by subject and level, primary mathematics programs focusing on instructional process had the largest effect size (.33), followed by instructional process programs for early primary reading skills (.31) and combined programs for early primary (.29) and upper primary (.28) reading skills.

The authors conclude that the most effective programs to improve students’ reading and math outcomes include professional development that comprises teaching strategies.

**Stringfield, S., Reynolds, D., & Schaffer, E. C. (2008). Improving secondary students' academic achievement through a focus on reform reliability: Four- and nine-year findings from the High Reliability Schools Project. Reading, Berkshire: CfBT Education Trust.**

*Highlight: A school intervention project was found to have an effect on students' national exam scores during the intervention and up to five years after.*

The authors report on the implementation and outcomes of the High Reliability Schools project, with the intent of whole school reform, in a high-poverty Welsh district. All schools involved set goals of increasing General Certificate of Secondary Education (GCSE) outcomes and attendance. To realize these and other goals, researchers presented workshops, students were tested upon school enrollment, grade-level teams met regularly to discuss how to best serve students, administrators reviewed systems, and peer observations were conducted. By comparing project schools' GCSE results with the Welsh national average and examining gains during and after the project, the authors conclude that the efforts resulted in significant gains in GCSE outcomes throughout the four years of intervention. Student outcomes on this national test also grew over the five years after the end of the intervention, suggesting that the reform made a lasting impact.

Six years after the intervention ended, the authors interviewed administrators and teachers from the schools in the district that had the largest and smallest GCSE outcome growth. They share seven aspects that teachers credited with making the most difference:

- Focus on just a few goals
- Use of data and data analysis to make practical changes
- Reviewing and reforming systems and structures
- Requirement for teachers to seek best practices, either through workshops, team discussions, or observations
- Off-site professional learning retreats
- Hiring of heads familiar with the project to replace former ones
- Observable, small achievements to energize stakeholders as they sought greater achievements

**Taylor, J. A., Roth, K., Wilson, C. D., Stuhlsatz, M. A. M., & Tipton, E. (2017). The effect of an analysis-of-practice, videocase-based, teacher professional development program on elementary students' science achievement. *Journal of Research on Educational Effectiveness*, 10(2), 241–271.**

*Highlight: Students of teachers who participated in professional development incorporating content and pedagogical knowledge saw greater improvement in science test scores and reasoning skills than those whose teachers participated in professional development focused only on content knowledge.*

Using a cluster-randomized trial, this study examined the effects of a professional development program on student science outcomes. Teachers at 42 primary schools participated in professional development on science content and pedagogical knowledge, and teachers from 35 primary schools participated in the same amount of professional development focused only on content knowledge. Students ( $n = 2,823$ ) were subjected to pretests and posttests. Students in the treatment group outperformed students in the control group, with a comparison effect size of .52 standard deviations. Posttest results further suggest that the professional development program that incorporated pedagogical knowledge improved student reasoning skills.

**Wilson, C. D., Taylor, J. A., Kowalski, S. M., & Carlson, J. (2009). The relative effects and equity of inquiry-based and commonplace science teaching on students' knowledge, reasoning, and argumentation. *Journal of Research in Science Teaching*, 47(3), 276–301.**

*Highlights:*

- In a laboratory-based randomized control trial, students taught through inquiry-based learning performed significantly higher on a posttest than students taught using traditional methods and had stronger argumentation skills.
- Race and gender-based achievement gaps were larger in a control group than in an inquiry-based treatment group, but a gap between the normalized gain scores of students eligible and ineligible for free or reduced lunch was larger in the treatment group.

In this experiment, 58 secondary school-aged students were taught about sleep and sleep disorders over the summer in a laboratory setting. Students were randomly assigned to control and treatment groups. The same teacher taught the same learning objectives to each group but used inquiry-based strategies and materials with the treatment group and traditional strategies and materials with the control group. The traditional course was developed based on responses to a Horizon Research study that reported the frequency of common teaching practices, while the inquiry-based course was built on the BSCS 5E Instructional Model, which has five phases to guide inquiry: engage, explore, explain, elaborate, and evaluate. Students completed pre- and posttests as well as a follow-up interview.

Students in the treatment group had significantly higher levels of achievement based on pre- and posttests, with an effect size of 0.47. Based on the interviews, students from the inquiry-based group offered stronger claims, evidence, and reasoning, but because there was no pretest of argumentation skills, the authors were reluctant to draw any conclusions from this.

Although there was no significant difference in the pretest scores of white and nonwhite students in either group, the authors did find an achievement gap in the posttest scores of the control group. They found no such achievement gap in the treatment group and found a smaller differential in normalized gain scores between male and female students in the inquiry group. However, because the differential for students eligible or ineligible for free/reduced lunch was larger in the inquiry group, the authors call for additional research to determine if inquiry-based learning has a disparate effect on students from differing socioeconomic backgrounds.

### III. Cultural and Programmatic Alignment

*This section explores studies that suggest programs are most successful when aligned with other programs or with aspects of a school or district's culture, such as mission and values.*

**Fien, H., Kame'enui, E. J., & Good, R. (2009). Schools engaged in school-wide reading reform: An examination of the school and individual student predictors of kindergarten early reading outcomes. *School Effectiveness and School Improvement*, 20(1), 1–25.**

*Highlights:*

- The authors found significant variance in student reading outcomes between schools, even when the schools were exposed to the same program and had similar socioeconomic statuses.
- Although level of program implementation did not explain the variance between schools, the authors suggest that an external audit of implementation, rather than a self-report, might do so.

The authors investigated school factors that influenced the success of a reading program in improving student outcomes. Students ( $n = 3,652$ ) in 57 high-poverty schools participated in the study, which included standardized literacy tests, a standardized tool to evaluate school systems and structures supporting reading instruction, proportion of students identified as meeting benchmarks, and proportion of students qualifying for free or reduced lunch.

Although the schools were largely homogenous, the researchers found that 22–36% of the variance in student test scores could be determined by school attended and that this did not correlate to the proportion of a school's population receiving free or reduced-price lunch. Self-reports of implementation also failed to predict student outcome variation between schools, but the authors theorize that an external audit might find that degree of implementation was related to student outcomes.

**Geier, R., Blumenfeld, P., Marx, R. W., Krajcik, J. S., Fishman, B., Soloway, E., & Clay-Chambers, J. (2008). Standardized test outcomes for students engaged in inquiry-based science curricula in the context of urban reform. *Journal of Research in Science Teaching*, 45(8), 922–939.**

*Highlights:*

- This study found that project-based inquiry science units were effective in improving standardized test scores and narrowing the gender achievement gap in Detroit Public Schools.
- The authors assert that well-developed instructional approaches coordinate curriculum, professional development, and resources.

This study examines the Detroit Public Schools' implementation of project-based inquiry science units, including aligned professional development and supportive technologies, and its effect on student outcomes. Seventh and eighth graders who participated in the units were compared to all students in the district who did not participate in the units based on their scores on a state standardized test in science.

Authors found that students who participated in at least one inquiry-based unit did significantly better on all components of the standardized test, especially those whose teachers had individualized support and those who participated in units in both Grades 7 and 8. They also found that the project-based inquiry science units were effective in narrowing the gender achievement gap found in many urban schools.

The authors attribute much of the program's success to the highly specified nature of the curriculum. They refrain from concluding that inquiry-based learning alone will improve student outcomes, and instead assert that the strength of the program came from the alignment of best practices, standards, professional development, and resources.

**Liang, X., Collins, L. J., Kruse, S., & Lenhart, L. A. (2015). Information is not implementation: Fidelity to a statewide professional development plan. *Academy of Educational Leadership Journal*, 19(3), 195–203.**

*Highlights:*

- An evaluation of a professional development program emphasizes the need for reform initiatives to have clear goals, built-in support, and ongoing communication.

- Programs are most successful when they are supported by school leadership and align with school priorities.

This study explores factors that improved fidelity to a professional development program and teachers' perceptions of support. The professional development program was designed to train teachers in formative instructional strategies and to encourage educators to form collaboration teams at their sites to support these instructional practices. One year after the orientation, evaluators found that a significant number of participants had not completed any training modules, formed teams, or developed goals for their school. Unsurprisingly, schools with supportive leaders and strong cultures had the highest levels of program fidelity. Through surveys and group interviews, evaluators determined that the purpose and plan of the program was not clearly communicated to all stakeholders and that program facilitators did not provide adequate support. Some participants struggled due to their school's lack of dedication to the initiative or competing priorities.

**Little, J. W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American Educational Research Journal*, 19(1), 325–340.**

*Highlight: Researchers found that professional development was more meaningful in schools that valued collegiality, evaluation, and experimentation.*

This study used interviews and observations of teachers and administrators at schools with varying levels of success and involvement in traditional professional development programs to understand organizational characteristics that support continuous learning and successful school reform. The researchers found that the most successful schools were more likely to have shared expectations in terms of both collegiality and the evaluation of practices. In successful and adaptable schools, teachers expected to collaboratively work together on designing and planning lessons, analyzing and evaluating outcomes, and considering new strategies. They valued staff development, evaluation, and experimentation as tools to improve their work.

Little does not offer suggestions for how schools can foster a culture of collegiality, evaluation, and continuous improvement, or professional development opportunities that can support this effort, such as professional learning communities (perhaps because such networks were not a well-known concept at the time).

**Main, K. (2009). "Mind the gap": Cultural revitalisation and educational change. *School Effectiveness and School Improvement*, 20(4), 457–478.**

*Highlight: Through case studies of three schools, the author discusses the stages of reform and conditions that will support reform.*

Main asserts that success of a reform can be measured by its integration into a school's culture. She considers how organizational structures impact educator engagement by examining four teacher teams at three schools undergoing reform that included developing small learning communities. Through weekly visits to the schools and group and individual interviews with the 24 teachers on the teacher teams, she determined that successful reform requires:

- clear communication about the reform and its intended outcomes,
- shared goals,
- aligned professional development,
- transformational leadership, and

- tools to monitor and document progress.

She notes that lack of resources and high turnover rates are common impediments to reform and calls for additional research into the effects of different leadership styles on reform attempts.

**Piasta, S. B., Justice, L. M., O'Connell, A. A., Mauck, S. A., Weber-Mayrer, M., Schachter, R. E., Farley, K. S., & Spear, C. F. (2017). Effectiveness of large-scale, state-sponsored language and literacy professional development on early childhood educator outcomes. *Journal of Research on Educational Effectiveness*, 10(2), 354–378.**

*Highlights:*

- A randomized control trial study of the impacts of different forms of professional development found that none of the programs had a significant effect on teacher knowledge, beliefs, or practice.
- The authors express concern over the implementation of the program and assert that implementing professional development with fidelity may make a difference in its effectiveness.

This randomized controlled trial study examined the impact of three types of language and literacy professional development on educator outcomes. Early childhood educators ( $n = 535$ ) were assigned to participate in a language and literacy workshop, the same workshop with coaching support, or a workshop on cognitive skills in other subjects (math, science, or social studies). All professional development was embedded and ongoing over 18 months. The researchers used questionnaires to measure educators' proximal knowledge, disciplinary knowledge, pedagogical knowledge, self-efficacy, and beliefs about language and literacy education. Classroom observations were conducted to assess the quality of the learning environment and classroom instruction.

Regardless of type of professional development, patterns of growth remained flat for knowledge outcomes, self-efficacy, beliefs, quality of environment, and instruction. This lack of effect held true regardless of education levels, certification status, or location. The authors acknowledge that there may have been effects of the professional development programs that were not captured by their measures, and/or that the professional development was not implemented as intended, especially in terms of coaching.

#### IV. Other

**Eckert, J., Ulmer, J., Khachatryan, E., & Ledesma, P. (2016). Career pathways of teacher leaders in the United States: Adding and path-finding new professional roles. *Professional Development in Education*, 42(5), 687–709.**

*Highlight: The authors challenge the National Center for Education Statistics' definition of "leavers" by exploring the reasons teachers left the classroom. Many reported opportunities to influence teaching policy and practice or for growth as teacher leaders as motivating factors of their career changes.*

The authors examine the leadership development and career pathways of teachers who participated in the U.S. Department of Education Teaching Ambassador Fellowship between 2008 and 2012. Of 69 teachers, 28% served as Washington fellows, working full-time for the department, and 72% worked as classroom fellows, teaching part-time and working part-time for the department. Fellows worked in grant writing, outreach, program innovation, and policy innovation. Researchers used surveys ( $n = 61$ ) and interviews ( $n = 12$ ) to examine leadership experiences before and after the fellowship.

According to former Washington and classroom fellows, benefits of the fellowship included increased leadership skills, knowledge, and opportunities. Almost two-thirds of survey respondents (64%) reported changing positions after their fellowship, and 55% were confirmed to have left their previous employment. This work-related change was constant between Washington and classroom fellows. Of these leavers, 27% became school or district administrators, 21% moved to positions in postsecondary education, and 18% worked in professional development. Others transitioned into nonprofits, professional teacher organizations, government agencies, or retired but worked part-time as consultants. Although the National Center for Education Statistics defines “leavers” as leaving the teaching profession, survey responses indicate that many “leavers” integrated teacher leadership into their new positions and many moved into different roles as a way of continuing their development as teacher leaders or influencing teaching policy or practice.

## Appendix H: IBE Outcomes

During interviews at case study sites, educators discussed knowledge, skills, dispositions (KSDs) and other outcomes they or their colleagues had gained through their IBEN participation. Table H1 lists the 18 IBE outcomes identified, the number and roles of educators who spoke to each one, the percentage of sites where at least one respondent spoke to that outcome, and representative comments.

Table H1. *Outcomes IB Educators (IBEs) Gain Through IBEN*

Outcome	#	Site %	Roles	Representative quotation(s)
Instruction tips for assessments: concrete study tips to improve instruction	120	100.0	All 4	<ul style="list-style-type: none"> <li>• [The IBE has] a deeper understanding of the end result . . . because she sees other schools’ final work that she is examining. (Slow X, NonIBE)</li> <li>• Not just informed, that just gives you a deep subject knowledge, not a subject knowledge actually, it gives you . . . pedagogical content knowledge . . . what it is that kids get wrong often, what sorts of things they misinterpret, what . . . brings out the best in them. (Fast C, HOS)</li> <li>• As an examiner, you start to see, ah, that’s what they’re looking for, . . . you’re sort of let into that secret chamber, the inner sanctum of that piece of knowledge. (Fast B, Coord)</li> <li>• I really don’t have time for it in my life, but I continue to do it, because it really keeps me in line with being able to apply the assessment criteria and teach the courses more effectively myself. (Slow Y, IBE)</li> <li>• You’d have the understanding that there doesn't necessarily need to be one way of going about that question with the answer. So being an examiner gives me a fuller range of sort of examples mentally that I can draw on from having seen an assignment or a paper or patterns. Particularly when you're marking exams that you can say, okay, avoid, this is a pitfall. (Fast C, IBE)</li> <li>• You understand the pressures better. You know the mark scheme really well, you then know better what the IB is expecting the students to talk about, to write down. (Slow Z, IBE)</li> <li>• As a teacher, sometimes you feel like you’re flying blind with that, and so I think the accuracy of our marking, our ability to give accurate predictions of work, particularly internal components, the accuracy of feedback and there is for development for students. (Fast C, IBE)</li> </ul>
High-quality: Skills or confidence	112	100.0	All 4	<ul style="list-style-type: none"> <li>• First, as a professional myself, it obviously made me develop and be more aware of my subject. It also gives you a confidence boost to know that you</li> </ul>

Outcome	#	Site %	Roles	Representative quotation(s)
				<p>have that something to support other teachers. (Slow Z, HOS)</p> <ul style="list-style-type: none"> <li>• It has empowered me as an educator. . . . What I do think has made a big difference is the IB knowledge. It has helped us a lot. There's a big difference between having IB Educators and not having them. (Fast D, Coord)</li> <li>• I'm not just guessing at what I'm supposed to be teaching the kids, or what skills are important, or which outcomes I'm aiming for. (Slow, F, IBE)</li> <li>• I started doing it for the money and now I do it for the learning. (Fast C, IBE)</li> <li>• It just gave me a great feeling of relief that I know what I'm doing . . . before having [to] actually mark and qualify, and yes, I can do this to IB standard, it was just guess work. . . . It gives you more confidence in how you're assessing your own students. (Slow X, IBE)</li> <li>• It's like a fish in water. . . . They feel so comfortable with their job [and] . . . that immediately affect[s] the student. (Fast A, HOS)</li> </ul>
High-quality: merit badge	84	100.0	All 4	<ul style="list-style-type: none"> <li>• I've rejected candidates because of their lack of IB experience and that same rationale would be taken that if I had two with the same IB experience and one was an examiner and one was a workshop leader. While the other one had nothing, I would take the workshop leader, 100% of the time, all things being equal. (Fast B, HOS)</li> <li>• They see me as an "expert." (Slow Y, IBE)</li> <li>• It's a small world. And then you have the IB world, which is a world within that small world. So, word gets around. "This guy's good." . . . Stuff like that. People talk. So, yeah, it's nice. It's a nice validation of what I'm doing. (Fast C, IBE)</li> <li>• When we first went to the workshops, we were little. And we were looking at these gurus, Argentinian, Columbian, Mexican teachers, and they were gurus to us. And I think we now feel [like] gurus. And I'm not being conceited at all, you know, I feel very humble by the whole experience honestly, . . . like, "Oh, my God. We've come such a long way." (Fast A, IBE)</li> <li>• It just gives you that extra backing that the IB employs me to do this. (Fast C, IBE)</li> <li>• People know that when I talk about MYP they trust that I know what I'm talking about. (Slow Z, IBE)</li> </ul>
Acquiring guides & resources	70	100.0	All 4	<ul style="list-style-type: none"> <li>• [IBEs have the] finger on the pulse [when] IB is . . . slow with resources. (Fast C, NonIBE)</li> <li>• Obviously that's a benefit because we have access to what the assessments will look like, what the curriculum will look like even though it's not even</li> </ul>

Outcome	#	Site %	Roles	Representative quotation(s)
				<p>finished yet . . . an inside scoop . . . then we can start planning sooner. . . . I knew about them much earlier when they were still in draft form. (Fast B, IBE)</p> <ul style="list-style-type: none"> <li>• I have to be on top of all the latest developments, so it forces me [to] where I just really have to be on top of the information that’s coming back. (Slow Z, IBE)</li> <li>• The most important thing is that being a part of these roles allows me to have access to information that I wouldn’t get otherwise. Besides, it forces me to research and innovate strategies. (Fast D, IBE)</li> </ul>
High-quality: professional development	61	100.0	All 4	<ul style="list-style-type: none"> <li>• IBEN training opens the world to teachers. That helps them kind of root their decisions to still become a teacher. I have teachers who are kind of tired. . . . They are thinking that their teacher years are over [and] the possibility of going somewhere and having this training kind of gives them a new vision of what else can be done. (Fast A, IBE)</li> <li>• The workshop leader training was some of the best PD I’ve ever done in terms of working in a nonsubject-specific way with like-minded people who are trying to push forward the agenda of quality education and with people from PYP and MYP. That was an amazing experience, certainly for my professional growth. (Fast B, Coord)</li> <li>• Although it is extra work for them, it is professional learning because they got to go to specific workshops and then they’re interacting with others who do these same kinds of things. They learn about what it looks like in other countries, in other cities, even just across our own . . . or neighboring [areas]. . . . All of those conversations, I think, really enhance their professional practice. (Slow X, HOS)</li> <li>• With the training courses, those have given me skills, tools and techniques, to bring them to school. (Fast D, IBE)</li> </ul>
Respecting perspectives	50	100.0	All 4	<ul style="list-style-type: none"> <li>• What it has allowed me to do is realize that there’s not a black and white answer to everything. . . . You can mold it to your own situation, and there are various models out there of how it’s been implemented . . . based on the constructions of whatever their challenges are, either in a nation or the community . . . or the political reasons, etcetera. (Slow Z, IBE)</li> <li>• [IBEs] learn about what it looks like in other countries, in other cities, even just across our own district or neighboring districts what they’re doing. (Slow X, HOS)</li> </ul>

Outcome	#	Site %	Roles	Representative quotation(s)
				<ul style="list-style-type: none"> <li>This is a global community. There may be things that you share and are similar, but there are other that are quite different. (Fast A, IBE)</li> </ul>
Engaging with IB Programme Standards & Practices (IBPS&P)	46	100.0	All 4	<ul style="list-style-type: none"> <li>You become very proficient and expert in both the program, both in mediating questions about the program and helping guide people in the program. (Fast C, IBE)</li> <li>[IBEs have a] much clearer sense of IB values and a more open idea about what we're trying to accomplish when it comes to being an IB school. (Slow Y, IBE)</li> <li>When I come back from a visit I can kind of, you know, you're still in that mindset of standards and practices. And coming back to your own school, then, and just . . . the first day I've done that, sometimes treating it like a visit. (Slow Z, Coord)</li> </ul>
Communicating mission	35	85.7	All 4	<ul style="list-style-type: none"> <li>It's also helped me to clarify for myself and for teachers in my school what it is that IB is about. I think it's really helped me hone my elevator speech. (Slow Y, Coord)</li> <li>I've seen a lot of schools, enough to know that I know I understand what the philosophy is meant by and what is intended and what they want to achieve, and I'm pretty confident in that. (Slow Z, IBE)</li> <li>It helps me explain it to the parents. (Slow X, IBE)</li> </ul>
Programme-appropriate pedagogy (more, broader, deeper)	34	100.0	All 4	<ul style="list-style-type: none"> <li>We're a bit nerdy that way. There's a joy in "Hey, we've got this new strategy" or "We've learned this new thing about the curriculum." (Fast B, IBE)</li> <li>I'm sure that even as an examiner that did strengthen my teaching and the learning that was happening in the classroom. (Slow Z, IBE)</li> </ul>
ILO: integrating I-M (international-mindedness)	27	100.0	All 4	<ul style="list-style-type: none"> <li>When [students travel abroad] they don't see . . . the world through the eyes of a researcher or a long-life learner. That is something that the IB has helped us to focus on. Becoming long-life learners ourselves to be able to transmit it to the [students]. That is something we are working on. (Fast A, IBE)</li> <li>We grow the world leaders who will contribute to world peace. [Before my IBEN experiences] I was wondering why world peace had anything to do with their education. (Fast B, IBE)</li> </ul>
Refining andragogy	25	85.7	All 4	<ul style="list-style-type: none"> <li>I think teaching adults is a lot harder than teaching kids. I was sufficiently freaked out the first workshop that I led. (Slow Y, IBE)</li> <li>I don't think I'd even heard the word andragogy before I got involved in it. . . . I'm pretty sure I know</li> </ul>

Outcome	#	Site %	Roles	Representative quotation(s)
				what pedagogy is. I've been doing a lot of that, but that was an interesting one. (Fast B, Coord)
ILO: valuing peer learning	23	85.7	All 4	<ul style="list-style-type: none"> <li>• Something that we have learned to do here is to work as a team. If one succeeds, everyone does. So everything that we do is as a team. (Fast A, IBE)</li> <li>• Even before I got any type of experience or knowledge out of the role, I was in contact with other people who had that hunger for excellence. (Fast C, IBE)</li> </ul>
ILO: integrating Learner Profile	20	100.0	All 4	<ul style="list-style-type: none"> <li>• We tend to think that the Learner Profile applies to the teachers, as well. . . . If they ask that students to be that, you should model that as well. . . . We have a teacher profile [and] the teachers that have been in IBEN trainers really are inquirers. They're really curious about new challenges. (Fast A, IBE)</li> <li>• I buy into the IB Learner Profile traits because I think that those speak to so much more than being able to do well on a test. (Slow Y, IBE)</li> </ul>
ILO: engagement	17	71.4	All 4	<ul style="list-style-type: none"> <li>• I always like to compare my becoming part of IB as a quantum leap. I was a very traditional teacher before, and I am no longer that traditional teacher. (Fast A, IBE)</li> </ul>
ILO: positive demeanor	14	100.0	HOS	<ul style="list-style-type: none"> <li>• It's kind of like when you're burned out and they have this new opportunity; it rejuvenates them and makes them fall in love with teaching again. (Fast A, IBE)</li> </ul>
ILO: reflective practice	13	85.7	HOS	<ul style="list-style-type: none"> <li>• My role as a workshop facilitator is to help them see how this can help improve their teaching. But the obsession over documentation that is so prevalent in a lot schools, [it is] sometimes counterproductive because people are like, "I don't want to fill out that form," when what we're really asking them to do is to be reflective and purposeful in their teaching and plan with student learning in mind and all the things that make for a good education. (Slow Y, Coord)</li> </ul>
ILO: transfer of knowledge	6	57.1	HOS	<ul style="list-style-type: none"> <li>• I think if you're [a traditional] kind of teacher, it's difficult to wrap your head around the IB philosophy of transferable skills: things that are a bit higher than simply teaching your content. (Slow Y, Coord)</li> </ul>
ILO: creativity	5	42.9	Coord	<ul style="list-style-type: none"> <li>• Part of the workshop is [that] participants develop knowledge products and we share all those. We're actually creating resources for our classrooms that then we can all share. (Fast B, IBE)</li> </ul>
ILO: empathy	3	42.9	HOS, NonIBE	<ul style="list-style-type: none"> <li>• Not making assumptions about what students come with when they begin the Diploma [Programme]. I think that's been very helpful. (Fast C, IBE)</li> </ul>

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Outcome	#	Site %	Roles	Representative quotation(s)
Instruction tips for assessment: Information/communication technology fluency	3	28.6	Coord, NonIBE	<ul style="list-style-type: none"> <li>It's taken me out of my comfort zone, so that has forced me to research, read a lot, learn different subjects like computing. (Fast D, IBE)</li> </ul>
ILO: problem solving	2	14.3	HOS, NonIBE	<ul style="list-style-type: none"> <li>We can contribute and share to solve those doubts (Fast D, IBE)</li> </ul>

*Note.* Site % = Percentage of sites where 1+ respondents spoke to code; Roles included HOS = head of school, Coord = coordinator, IBE teacher, NonIBE teacher; ILO = increased levels of . . .

## Appendix I: School Outcomes

During interviews at case study sites, educators discussed outcomes their schools enjoyed as a result of their or their colleagues’ IBEN participation. Table I1 lists the 8 school outcomes identified, the number and roles of educators who spoke to each one, the percentage of sites where at least one respondent spoke to that outcome, and representative comments.

Table I1. *School Outcomes Stemming from IBEs’ IBEN Participation*

School outcome	n	Site %	Roles	Representative quotation(s)
Developing/ applying systems or processes to collaborate/ share	113	85.7	All 4	<ul style="list-style-type: none"> <li>• The idea behind the [classroom] observations is for colleagues to see each other and learn from each other—to collaborate in that way as opposed to being a judgy kind of observational experience. They call it looking at learning because that’s what they want it to be about: educators learning from educators. (Fast B, IBE)</li> <li>• Common planning periods for the four core content areas in [Grade] 9–12; it took a Herculean effort on the part of our master scheduler, who has since moved on to another school, to make that happen. So we have invested significant time in getting people released at the same time. (Slow Y, Coord)</li> <li>• The level of the meetings. . . . Everything is more professional now. (Fast A, HOS)</li> <li>• Comparing with a couple of years ago, the workload has become a lot less just because we’ve set up everything. (Fast C, IBE)</li> <li>• We’re all colleagues and friends so we have a really cohesive group. We’ve been working together for almost 10 years, most of us, and we have open-door policies with our classrooms, so it’s not really formal times that we do this. (Slow X, IBE)</li> <li>• We do not have that distinction between a teacher being IB teachers only, but all of our teachers teach middle school and high school. That would be from Grade 8–12. And we did that so that we would have teachers in Grades 8–10 getting [students] ready for the skills that they know they need up as juniors and seniors for the [Diploma Programme]. (Fast A, IBE)</li> </ul>
Increased number of IBEs	60	100.0	All 4	<ul style="list-style-type: none"> <li>• [IBEN participation] has highlighted opportunities for our teachers. . . . I don’t know if they necessarily would have done that or even if they would have realized the opportunities that were there for them. (Slow X, HOS)</li> <li>• The coordinator is always sending us emails to remind us to participate and apply in the trainings, workshops. And they support us. (Fast D, IBE)</li> <li>• They speak to some of the other faculty who are part of the IBEN, and they say how beneficial it has been to their teaching. . . . I’ve said, “You know what, the next stage of your training is probably to be an</li> </ul>

School outcome	<i>n</i>	Site %	Roles	Representative quotation(s)
				<p>examiner . . . or workshop leader. . . . I felt that it was a natural stage in their career to move that way. (Fast B, HOS)</p> <ul style="list-style-type: none"> <li>I would say that this is a requirement from a . . . diploma coordinator. You're asked to promote this, and you do it because, in my case, I believe this is definitely a good way to develop professionally. So, it's a requirement, and then it's also a way to have teachers in your school [who] are more knowledgeable and more IB savvy." (Slow Z, Coord)</li> </ul>
Wider staff engagement in IBEN-learned practices	51	85.7	All 4	<ul style="list-style-type: none"> <li>There shouldn't be anyone at this school, who is not, who doesn't understand how to apply the [programme] criteria, for example. That just shouldn't be, because we have people here right in this building who train other teachers from all over the place how to do it. (Slow Y, IBE)</li> <li>It's hard to change their paradigm, but once they're there, just a little push and they go. (Fast A, Coord)</li> <li>What that means is we have a group of teachers who are well versed in that language already. So when we're trying to have staff workshops, and we're trying to have people run different sessions at our own professional learning conferences, we have people in the building who can already do that (Slow X, HOS)</li> <li>But if you're running an IB program in whatever form it takes in your school and people are being encouraged to act at higher level in an engagement that they can then bring back to the school, I cannot see a school rationally saying that's not a positive thing. (Fast B, Coord)</li> </ul>
Deepening engagement with IB school community	49	85.7	All 4	<ul style="list-style-type: none"> <li>We're fortunate we're in a very good school. But I think one of its failings, then, or one of the failings that you get when you stay in this school, is that you succumb to a kind of institutional arrogance. Whereby look: "We're successful. We're a good school. We're a great place. Why would we even need to go and see other places? We've already got it nailed." (Fast B, Coord)</li> <li>I can say do you know anyone? And they go: "I know someone." (Fast C, HOS)</li> <li>In [our country], we have created a beautiful [IB] community. We meet once a month and help each other progress. . . . It's very beautiful, a very healthy environment. (Fast D, Coord)</li> <li>That we go outside, we go abroad, it's very enriching. It helps us see things in different perspectives. If not, we're very local. For instance, that's something that I'm going to be a little bit critical, and I hope you don't mind, of the States.</li> </ul>

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School outcome	<i>n</i>	Site %	Roles	Representative quotation(s)
				Because normally the States is very into their own stuff, you know? (Fast A, IBE)
Increased exam scores	33	100.0	All 4	<ul style="list-style-type: none"> <li>• [IBEs] guide us a lot. That's why we got 100% this year. (Fast D, IBE)</li> <li>• I definitely correlate the results, the final results to the fact that my teachers are part of that exclusive group. (Fast A, HOS)</li> <li>• It's probably made my IB results better. Hopefully, the kids are still getting a lot out of the classes. But there is that thing when you're teaching a course that runs to an exam. It's kind of in the forefront of your mind. (Fast B, IBE)</li> </ul>
Increasing prestige	17	85.7	NonIBE	<ul style="list-style-type: none"> <li>• We use it as a selling point in our IB orientation nights and information nights. I don't know that parents would choose to put their kids [here] just because of that, when they're looking at options, because students can choose to come here for this program . . . [but] by having teachers that are willing to spend this extra time on their own, it does show our dedication to the professionalism and to our own development as teachers in IB and also then give that expertise and pass it on to our students (Slow X, IBE)</li> </ul>
Aiding recruitment	15	85.7	NonIBE	<ul style="list-style-type: none"> <li>• I've had a suspicion for the last couple of years . . . that was the reason I was recruited. (Fast C, IBE)</li> </ul>

*Note.* Site % = Percentage of sites where 1+ respondents spoke to code; HOS = head of school; Coord = coordinator

## Appendix J: Critical Actions of IBEN Members

During interviews at case study sites, educators shared factors they believe have influenced the outcomes they or their schools have enjoyed as a result of their or their colleagues' IBEN participation. Table J1 lists the 11 critical actions identified, the number and roles of educators who spoke to each one, the percentage of sites where at least one respondent spoke to that factor, and representative comments.

Table J1. *IB Educators' (IBEs') Critical Actions as IBEN Members*

Action	n	Site %	Roles	Representative quotation(s)
Networking with other IBEs	96	100.0	All 4	<ul style="list-style-type: none"> <li>• Actually carrying out the workshops, it puts you in touch with other people. For my subject, it was great to just be able to share ideas. And, although I was leading it, I got as much out of it as everybody brings ideas that they can share. (Slow Z, HOS)</li> <li>• It's a ready-made networking tool. . . . Contacts suddenly grow by 25 people. (Fast B, Coord)</li> <li>• So, the network of other IBEN people is amazing. The informal network of people who also do this is fantastic. In a second, I'm connected to all of these people from all over the country, who I can email and ask a question. (Slow Y, Coord)</li> <li>• It's put me in contact with a lot of other . . . educators who are extremely interested and very, very, very committed to ensuring that they become the best possible teachers, the best possible deliverers and educators of this subject. (Fast C, IBE)</li> <li>• We don't have the opportunity to meet colleagues often, unless we meet for these type of activities. (Fast D, IBE)</li> <li>• You get very rich from the experiences of others. (Fast A, IBE)</li> </ul>
Supporting colleagues' implementation	95	100.0	All 4	<ul style="list-style-type: none"> <li>• It's anecdotal evidence, but I think those are the teachers that we tend to rely on to share their expertise with others. And certainly not exclusively, we rely on only those teachers. But those are the teachers that really do hold the bulk of the knowledge and skills. (Slow Y, Coord)</li> <li>• They have the insights that we do not have access to. They are really generous. (Fast A, IBE)</li> <li>• One of our colleagues, who is unfortunately retiring next year, was an experienced IB examiner for a while and whenever we do moderation papers and things like that, she's always able to share that experience. The same with our head of learning. She also is part of our department and so she's able to share her experiences visiting other schools when we're talking about curriculum reviews, things like that. And so it informs what we do within our department. (Slow Z, IBE)</li> </ul>

Action	n	Site %	Roles	Representative quotation(s)
				<ul style="list-style-type: none"> <li>You'll hear it from the horse's mouths along the way. Just the amount of the amount of experience there is in it, there's always somebody to go to. (Fast C, Coord)</li> <li>I know I can go to [our IBEs] and I know I'm going to get answers very quickly. (Slow X, NonIBE)</li> </ul>
Presenting to colleagues	86	100.0	All 4	<ul style="list-style-type: none"> <li>I'm always sharing everything. Everything that I find, it's like at some points I can be annoying to my [co-workers], because I'm always, even a Sunday night, I'm sending stuff that I find on the web. And they're like, "It's a Sunday. Let us sleep and take a break." (Fast A, IBE)</li> <li>We've got subject leader meetings and often we get feedback from latest workshops or latest trends in the IB. (Slow Z, NonIBE)</li> <li>We don't have to go through failure and trial. We get the training here. (Fast C, IBE)</li> <li>[IBEs make] sure that everyone else has access to it as well even if they're not participating in the network themselves. (Slow X, NonIBE)</li> <li>I'm just a servant. The more I have, the more I have to give. So, my role is to share as many experiences as I can and learn from other contexts. (Fast D, Coord)</li> <li>They are constantly downloading and giving us information. (Fast D, NonIBE)</li> <li>Before I even got here, I got a file folder from [our coordinator] full of [programme] rubrics and things like that, and sort of a rundown of how things went here. So even before I even knew what [the IB programme] was, or had started teaching it, I already had somebody there was very familiar with it, knew what it was, and was quickly trying to communicate some of the expectations for teachers teaching in that kind of program. It was very helpful. (Slow Y, NonIBE)</li> </ul>
Ongoing PLC participation	45	85.7	All 4	<ul style="list-style-type: none"> <li>Even when we have lunch together, it's like a meeting. (Slow X, Coord)</li> <li>We directly have a slot in one of the faculty meetings where we share what we found out. (Fast, B, NonIBE)</li> <li>We've got 20 people, but we're all in this hallway. We're all here 10 hours a day. We have a tight department with lots of people who enjoy working with one another and we have teaming [PLCs] That's probably the main way to share. (Slow Y, IBE)</li> <li>We have meetings with my colleagues once a week. We share our classroom experiences and we also share with other colleagues from different subjects. We share examples and we help each other. It's very important. (Fast D, IBE)</li> </ul>

Action	n	Site %	Roles	Representative quotation(s)
Demonstrating value to leaders	39	71.4	NonIBE	<ul style="list-style-type: none"> <li>I gave all the possible opportunities to the team of teachers involved in IBEN. They had no restrictions from me. (Fast D, HOS)</li> <li>When you have teachers who have gone through the training and been to exam sites and run those exams over the course of several years, I think they can do a better job of prepping the students. That's just a benefit to our kids as well. (Slow X, HOS)</li> <li>[Our head] knows it's a plus for this school. (Fast A, Coord)</li> </ul>
Serving as school leader	37	100.0	All 4	<ul style="list-style-type: none"> <li>Most of the leadership are ex-IBEN. That speaks for itself. (Fast C, IBE)</li> <li>[Our IBEs] are two important members in schoolwide decisions. Decisions related to allocation of resources, the schedule, even to some extent who might be teaching certain courses. [They] play an important role in the leadership structure. . . . They have the principal's ear. (Slow Y, Coord)</li> <li>[I tell them,] "You are the ones who manage the school." . . . I mean that they rule the whole school. . . . They have all the power. (Fast A, HOS)</li> </ul>
Reflecting on QA findings	37	85.7	HOS, NonIBE	<ul style="list-style-type: none"> <li>It drives growth. It drives learning both in my own practice as well as in the practice of others who I may be influencing. (Fast B, IBE)</li> <li>I always read them and they're interesting. The thing about the feedback . . . is that you will get many people who are very grateful for your insight, expertise, kindness, [and] so on. There are people who are forced to go to workshops and they're not happy about it. Even when I try to keep it interesting, there's always going to somebody who's like, "This guy. I could do it better than him." So, it keeps me humble. (Slow Y, IBE)</li> <li>When they evaluate me . . . I love it. Because there's always things that I can improve. And every workshop leader, they can come from Ecuador, Colombia, Peru, other places, and also the participants, have different perspectives about the strategies that we use in the workshops. So it's wonderful when they let you know and you can achieve it. (Fast D, IBE)</li> </ul>
Linking school to IB	32	100.0	All 4	<ul style="list-style-type: none"> <li>Links between those two worlds [are] really important. (Fast C, Coord)</li> <li>[One of our IBEs is] well-known in the IB community, so she's got a lot of good contacts. She'll hear about things that are going on firsthand. I think she even has a voice in some of the decisions that are made, and as a result, we're all a little bit more connected to IB. (Slow X, HOS)</li> </ul>

Action	n	Site %	Roles	Representative quotation(s)
				<ul style="list-style-type: none"> <li>• There's three people in the world who would have seen [the new curriculum]. I'm one of them. (Fast B, IBE)</li> </ul>
Meeting/exceeding minimums (workshops)	24	100.0	NonIBE	<ul style="list-style-type: none"> <li>• I tend not to accept things that involve a full day of travel going to and from, which makes it a five-day trip, rather than a three-day trip. . . . As long as it's not in a key busy time in my calendar, I'll try and do it. (Fast B, Coord)</li> <li>• I don't think we ever really say "No" very often, but I do sometimes feel like I have to control it. . . . We've got to concentrate on the job at hand every now and then, as well. (Fast C, Coord)</li> </ul>
Sharing with school leaders	20	71.4	All 4	<ul style="list-style-type: none"> <li>• If I see or I am aware of something that's happening, etcetera, I would go to [the IB Coord-inator] as leader for learning for curriculum or . . . just brainstorm or just tell her about it. (Slow Z, IBE)</li> </ul>
Meeting/exceeding minimums (examinations)	14	57.1	HOS, NonIBE	<ul style="list-style-type: none"> <li>• Sometimes when you're marking, you're going, "Oh, my god, why did I agree to do this again?" And you go, "Oh yeah, yeah it really helps me." (Slow X, IBE)</li> </ul>

Note. Site% = Percentage of sites where 1+ respondents spoke to code; HOS = head of school; Coord = coordinator; PLC = professional learning community; QA = quality assurance

## Appendix K: Network Outcomes

During interviews at case study sites, educators discussed outcomes they believe the IBEN Network gains as a result of member participation. Table K1 lists the 4 school outcomes identified, the number and roles of educators who spoke to each one, the percentage of sites where at least one respondent spoke to that outcome, and representative comments.

Table K1. *Network Outcomes from IBEN Participation*

Network outcome	n	Site %	Roles	Representative quotation(s)
Sustained engagement	54	100.0	All 4	<ul style="list-style-type: none"> <li>• This year, first time I’m a Team Leader. . . . If you mark papers online, you are officially an Assistant Examiner, and then the next step up is the Team Leader. (Slow Z, IBE)</li> <li>• After two years of examining the same paper, I’ve . . . just not found that I’m getting much more professionally in terms of my learning. But, it does mean that I’d like to examine a different aspects of the paper or a different aspect of the course, because I feel like there’s still something I could learn from that. (Fast C, IBE)</li> <li>• I love the program, that’s why I’m part of so many roles. (Fast D, IBE)</li> <li>• To become a workshop leader, you need to be highly regarded and I think that’s good for my own personal performances, something I’d like to look into. I’m actually going to apply to be a workshop leader, and I think I can offer enough. I’ve got the experience. (Fast B, IBE)</li> </ul>
Schools aligning culturally to IB	52	100.0	All 4	<ul style="list-style-type: none"> <li>• We can see more clearly if something is not properly aligned. (Fast D, IBE)</li> <li>• It made us exercise a flexibility muscle that [was] sore. And I would love to see more schools doing it, too. Because IB is like a glove, and it fits the hand that wants it. And I don’t think that many schools are seeing all the potential there is with IB. (Fast A, IBE)</li> <li>• They work to make sure that every facet of the school is doing it, that the school is embracing that philosophy from top to bottom. Every class, every department, every student is an IB student in this school. And I think that’s what those educators bring to that, is that mission. (Slow Y, NonIBE)</li> <li>• Our school is very well-aligned with that philosophy. . . . Other circumstances and situations it would be very, very difficult. Very, very challenging. A frustration that I encountered in the last workshop I led was a number of the teachers were upset because I was insisting on the inquiry-based approach and I was not doing the lecture: stand, chalk, and talk. And I got some critical feedback from a number of participants even accusing me of not being prepared because I was making them collaborate and produce materials. (Fast B, IBE)</li> </ul>

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All IBEN tasks staffed with quality-assured individuals	9	71.4	All 4	<ul style="list-style-type: none"> <li>That's why I want to do it because I'm fed up with people complaining about how bad the quality is with regards to workshops so I want to make it better. (Fast C, IBE)</li> </ul>
Decreased per-teacher variance in students' scores	2	28.6	HOS, NonIBE	<ul style="list-style-type: none"> <li>For internal assessments, they sit down and they listen to the different records and they standardized the way they grade. (Fast A, Coord)</li> </ul>

Note. Site % = Percentage of sites where 1+ respondents spoke to code; HOS = head of school; Coord = coordinator