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Assessing the Status of Professional Learning Opportunities in EARCOS Member Schools

by

Mark Brandon Hardeman

A Dissertation

Presented to the Graduate and Research Committee

of Lehigh University

in Candidacy for the Degree of

Doctor of Education

in

Educational Leadership

Lehigh University

December 2015

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December 2015

Dissertation Signature Sheet

Approved and recommended for acceptance as a dissertation in partial fulfillment of the requirements for the degree of Doctor of Education.

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risk, but I am hopeful that the results help to affirm the great work that you have undertaken within the EARCOS region.

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Abstract

The purpose of this study was to assess the extent to which professional development programs within EARCOS member schools are consistent with research-based principles of effective practice. In addition, this study sought to identify the professional development opportunities that are being provided to EARCOS teachers. Finally, this study determined which professional development experiences teachers believe are most and least effective for their development. The literature review established a set of core features of effective professional development programs; content focus, coherence, durations, active learning and collective participation. The literature also highlighted a lack of evidence that schools/districts have successfully aligned their professional development programs with these core features.

A survey was distributed to all faculty members working in EARCOS member schools. The International School Professional Development Inventory (ISPDI) was derived from a parent instrument, the International School Teacher Development Inventory (ISTDI). The ISPDI was designed to assess the extent to which international school teachers believed their professional development experiences were consistent with the core features outlined in the available research. The total number of completed surveys was 675, roughly 5% of the population.

A factor analysis was applied to the ISPDI data outlining seven factors; active learning, support, and collaboration during instruction (ALSCDI), collaboration while planning instruction (CPI), content focus, coherence, onsite, traditional, and duration. Descriptive statistics were utilized to determine that teachers within EARCOS member schools perceive their professional development experiences to be well aligned with the

identified factors, especially when compared with similar studies conducted in the United States. Further analysis highlighted that some organizational and individual level variables can impact a teachers perception regarding the effectiveness of their professional development experiences. Elementary teachers, and teachers working in non-profit schools reported higher alignment than secondary teachers or teachers working in proprietary schools. In addition, specialist teachers reported higher alignment than core area teachers. As teachers became more experienced, their perceptions of alignment with the identified factors also increased.

CHAPTER 1

Background of the Study

The current educational landscape is extremely fluid and the demands and responsibilities of educators in schools are changing on a yearly basis. The expectations to prepare students for an unknown future and increasing accountability measures in schools have become the burden of teachers in a public forum. For schools to accomplish their goals as institutions, effective professional development programs are in place to help teachers improve their skills and knowledge to benefit the learning of their students. The professional development of teachers is often a central component of educational reform agendas around the world (Borko & Putnam, 1995; Darling-Hammond, 1993; Desimone, 2009; Talbert & McHaughlin, 1993; Thompson & Zeuli, 1999). For example, the No Child Left Behind Act of 2001 specifies that states ensure the availability of high-quality professional development programs for all teachers (No Child Left Behind Act [NCLB], 2001). As in the NCLB legislation, many reform policies have indicated schools can be no better than their educators and policy makers have emphasized quality professional development programs in nearly every educational improvement plan (Guskey, 2003).

Although professional development programs are well-established in school settings, limited research showed a correlation between professional development programs and increased student achievement (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Extant literature indicated the lack of research indicating direct links between the professional development of teachers and improved student achievement as one of the most significant issues influential to preventing educational improvements in schools

(Sykes, 1996). Many of the traditional models of professional development such as teacher workshops have consistently demonstrated little to no effect on improved student learning (Cohen & Ball, 1999; Garet, Porter, Desimone, Birman, & Yoon, 2001; Guskey, 1986; Supovitz & Turner, 2000). Furthermore, studies have consisted mainly of showing teacher satisfaction, changes in teacher's attitudes, or their commitment to innovation rather than student achievement results in the classroom setting, to ascertain the effectiveness of professional development programs (Desimone, 2009; Guskey, 2000).

Despite recognition of its importance, many teacher professional development programs have been inadequate (Borko, 2004). Even though schools, districts, and governments spend millions of dollars on methods to improve the performance of teachers, these programs are often fragmented, intellectually superficial, and fail to recognize the learning processes of the adults who utilized them (Borko, 2004; Cohen & Ball, 1999). As school systems seek to improve their practice, educators must have access to effective professional development programs designed to improve teacher practice and student learning.

One of the difficulties researchers face when trying to assess the implementation of effective professional development programs is the wide variety of useful activities for improving the performance of educators. Professional development refers to any activities in which educators can develop their knowledge, skills, practices, and dispositions to help students perform at higher levels (Learning Forward, n.d.). With this definition, the number of activities that could qualify as opportunities for teachers' professional development is endless. Professional development activities could include mentoring, reflection, group discussions focused on student work, book clubs, and study

groups (Desimone, 2009). Educators engage in professional development opportunities each time they teach a lesson, give an assessment, review their curriculum, or read a professional article (Guskey, 2000). When working with such a broad definition, measuring the success of professional development programs within educational institutions becomes extremely difficult.

In the modern era of educational accountability, many policy makers have demanded evidence of direct links between professional development and student achievement (Guskey, 2003). Therefore, researchers have now begun to investigate the components of effective professional development programs for schools to improve the practice of their faculty and increase student learning (Borko, Elliott, & Uchiyama, 2002; Youngs & King, 2002). Although the body of research is scant, some common traits of effective professional development programs have begun to emerge. Desimone (2009) emphasized the presence of "an empirical research base to support the identification of a core set of features of effective professional development" (p. 181). These features are typically identified within the research as a focus on pedagogical content, opportunities for active learning, coherence, duration, and collective participation (Blank, de las Alas, & Smith, 2008; Desimone, 2009; Garet et al., 2001; Yoon et al., 2007).

To organize the learning activities construed as professional development into a measurable format, researchers have attempted to focus measurement on these key features of professional development programs. Researchers frequently compile these features into lists of activities, structures, or processes constituting effective professional development (Guskey, 2003). This research has indicated a "consensus about at least some of the characteristics of [professional development] that are critical to increasing

teachers' knowledge and skills and improving their practice, which hold promise for improvement in student learning" (Desimone, 2009, p. 183). Furthermore, this relative consensus now allows for a firm set of features (focus on content pedagogy, opportunities for active learning, coherence, duration, and collective participation) to create a framework for the measurement of effective professional development programs. Unfortunately, even though consensus is evident within the literature regarding the key features of effective professional learning, no part of the literature indicated the existence of a developed, consistent instrument to assess the status of professional development programs within school systems.

Conceptual Framework

The conceptual framework for this study is an adaption of a study, whereby Murray (2010) assessed the status of professional development opportunities in U.S. independent schools. In this study, I seek to assess the status of professional development opportunities for educators working within the East Asia Regional Council of Schools (EARCOS). Researchers have helped define the concept of effective professional development practices. Research show these features as a focus on pedagogical content, opportunities for active learning, coherence, duration, and collective participation (Blank et al., 2008; Desimone, 2009; Garet et al., 2001; Yoon et al., 2007). As Desimone (2009, p. 185) summarized the effective professional development for educators (see Figure 1).

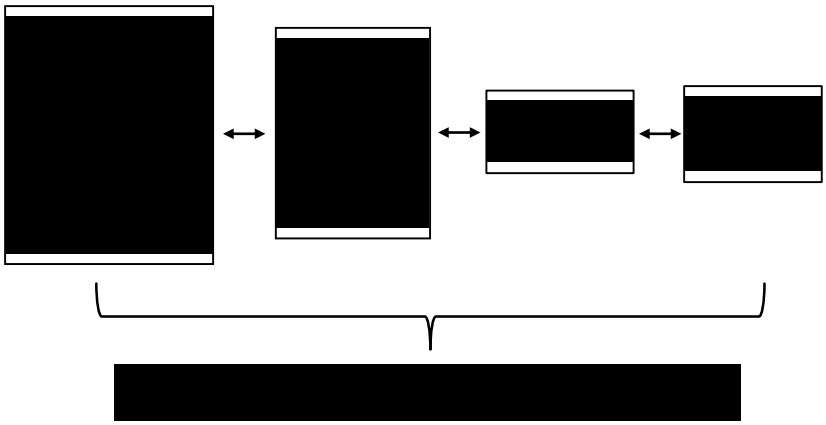


Figure 1. Model of effective professional development.

In this study, I utilized the five core features indicated in the literature to define the practice of effective professional development programs. Furthermore, I investigated how organizational and individual level variables influence the perceptions EARCOS member school educators have about their own professional development opportunities. Finally, I identified the types of professional development experiences present in EARCOS member schools and outlined which experiences educators have found to be most and least effective.

Need for the Study

With models and relative consensus on what components are necessary for effective professional development, one would hope schools would be ready to shift their practice and implement programs useful for improving teacher practice and student learning. Unfortunately, several studies have indicated U.S. public schools consistently fail to meet a standard of effective professional development (Blank et al., 2008; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Desimone, Porter, Garet, Yoon, & Birman, 2002). Furthermore, Murray (2010), in his study indicating the status of professional development opportunities in U.S. independent schools, found "a

significant gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development" (p. 112). Similar results have been apparent outside of the United States. A key finding from a study conducted by the Organization for Economic Co-operation and Development (OECD) in 20 countries showed "the most effective types of development, according to teachers, are those in which they participate least" (OECD, 2009, p. 78). The discrepancy between teachers' low participation rates in activities, which they felt had the greatest impact on their practice, is a major concern for school systems trying to support improved teaching practice.

Purpose of the Study

The purpose of this study is three-fold. First, I seek to assess the extent to which professional development programs within EARCOS member schools are consistent with research-based principles of effective practice. Second, I seek to identify the professional development opportunities provided to teachers in EARCOS member schools. Third, I seek to discover the professional development experiences teachers believe are most and least effective for their development. With these findings I extend current research conducted in U.S. public and private schools, outlining the effectiveness of professional development programs for educators and providing insight into the most effective types of professional development experiences.

Research Questions

The following research questions in this study are as follows:

1. To what extent are professional development practices in EARCOS member schools consistent with research-based principles of effective professional development?
2. To what extent do differences exist in professional development practices and the following organizational level variables?
    a. School division in which educators work (elementary and secondary)
    b. Proprietary status of schools (nonprofit vs. proprietary)
    c. Curriculum framework (IB vs. non-IB)
3. To what extent do differences exist in professional development practices and the following individual teacher variables?
    a. Years of experience
    b. Status of contract (overseas hire vs. local hire)
    c. Role within the school (core area teachers vs. special area teachers)
4. What are the most prevalent professional development experiences in EARCOS member schools?
5. According to educators employed in EARCOS member schools, which professional development experiences are
    a. most effective for their development as educators?
    b. least effective for their development as educators?

Definition of Terms

The following definitions will be helpful in clarifying terminologies for this study:

East Asia Regional Council of Schools (EARCOS). The East Asia Regional Council of Schools is an organization of 142 member schools in East Asia. Its mission is to "inspire adult and student learning through its leadership and service and [foster] intercultural understanding, global citizenship, and exceptional educational practices within our learning community" (EARCOS, 2014b). The region ranges from Myanmar in the west to Fiji in the east, from Japan and Mongolia in the north to Indonesia in the south. EARCOS schools may be located in Brunei, Cambodia, China, Fiji, Guam, Indonesia, Japan, Laos, Malaysia, Mongolia, Philippines, Singapore, South Korea, Taiwan, Thailand, Timor Leste, and Vietnam (EARCOS, 2014b).

EARCOS member schools. For the purposes of this study, EARCOS schools refer to any regular member school of the EARCOS organization. According to the EARCOS constitution (2014b), member schools shall provide an educational program internationally minded in style and substance, delivered through the medium of the English language and appropriate for the ages, needs, and abilities of the students enrolled in the school. EARCOS member schools must have the accreditation of an external body, such as the Western Association of Schools and Colleges (WASC), which is helpful in ensuring the quality of member schools within the organization.

Effective professional development. This type of development refers to opportunities for teacher learning, associated with positive changes in teacher beliefs, knowledge, skills, and practice. The core features of effective professional development

include focus on pedagogical content, opportunities for active learning, coherence, duration, and collective participation (Blank et al., 2008; Desimone, 2009; Garet et al., 2001; Yoon et al., 2007).

Traditional professional development activities. A model of professional development characterized by learning experiences takes place outside of a teacher's classroom. Generally, these activities involve a leader with special expertise and participants who attend training sessions at specified times. Common traditional professional development experiences include workshops, conferences, courses, and institutes (Loucks-Horsley, Hewson, Love, & Stiles, 1998).

Elementary division. Often divided into divisions, EARCOS schools are for students of all ages. Educators, per classification as a member of the elementary division, work with students from primary kindergarten (PK-3) to Grade 5.

Secondary division. With EARCOS secondary school division, educators work with students in Grades 6 through 12.

Nonprofit EARCOS schools. Nonprofit schools are organizations utilizing revenue exclusively for reinvestment into the educational program. Overseas sponsoring companies, embassies, or NGOs typically form these schools to provide international education for expatriate students in locations across the EARCOS region.

Proprietary EARCOS schools. Proprietary schools are organizations created by individuals or corporations to provide students with an international educational experience, as well as create profit for their owners.

International Baccalaureate. The International Baccalaureate (IB) is a curriculum framework the International Baccalaureate Organization (IBO) developed.

Schools can obtain accreditation to offer all, or some, of their programs. The PYP is for students aged 3–12, the MYP is for students aged 11–16, and the DP is for students aged 16–19 (IBO, n.d.).

Overseas-hired faculty. EARCOS schools often recruit teachers from many countries around the world to work in their institutions. Many overseas-hired teachers obtain their teaching certification in their home country, and are subsequently recruited, hired, and relocated to the host country at the school's expense. Overseas-hired teachers receive enhanced benefit packages, including housing, free tuition for their dependent children, and access to professional development funds, used at their discretion to promote their practice.

Locally hired faculty. EARCOS schools also recruit educators from their host country to work in their organizations. Typically, locally hired faculty members are host-country nationals or foreign nationals, who reside in the host country on their own accord. The contracts for locally hired faculty can vary from overseas-hired faculty and may or may not include additional benefits, such as housing, free tuition, or access to professional development funds.

Core area teacher. For the purposes of this study, core area teachers are those who work within the traditional disciplines: math, science, language arts, and social studies.

Specialist area teacher. For the purposes of this study, specialist area teachers are those who work outside the traditional disciplines: physical education, health, performing arts, visual arts, student support services, technology, or any other discipline within EARCOS member schools.

CHAPTER 2

Literature Review

This chapter contains the review of literature examining research related to the status of professional development programs in EARCOS member schools, including definitions of professional development, core features of effective professional development, and the status of professional development programs in school settings. My purpose for this review of literature is to outline the research related to professional development opportunities for teachers, position this study within the existing literature, identify gaps in the research, and demonstrate how this study will address the lack of research in EARCOS member schools regarding professional development opportunities for teachers employed in these schools.

The desire to reform educational systems is an ongoing phenomenon and many perceive it as necessary to prepare students for a constantly changing world. Furthermore, educational reform remains to be an open discussion in a number of environments and in many countries around the world. As schools continue to strive to improve the educational experience, their efforts increasingly encounter a high degree of scrutiny. Policies such as the No Child Left Behind Act of 2001 hold school communities accountable for improved student outcomes. Although educational institutions have always worked to develop the skillset of educators, the definition of professional development has evolved significantly in the past few decades.

Traditional Model of Professional Development

Historically, professional development has been an encapsulation of the traditional approach. This approach typically includes teachers' participation in

workshops, conferences courses, and institutes (Garet et al., 2001). Loucks-Horsley et al. (1998) suggested the traditional model is a

> structured approach to professional development that occurs outside the teacher's own classroom. It generally involves a leader or leaders with special expertise and participants who attend sessions at scheduled times often after school, on the weekend, or during the summer. (pp. 42–43)

The traditional model relied on the transmission of information from lecturer to learner, with little input from the recipients, and rarely included any follow-up support opportunities (Borko, 2004).

Researchers have consistently criticized the effectiveness of this traditional model for professional development (Blank et al., 2008; Cohen & Ball, 1999; Darling-Hammond et al., 2009; Garet et al., 2001; Supovitz & Turner, 2000). Cohen and Ball (1999) utilized questionnaires and interviews to investigate the impact of a professional development program for 2,000 mathematics teachers in California. The program consisted of a two-day workshop followed by two expert speakers presenting on separate in-service days throughout the school year. Findings from this study indicated that teachers felt this program was largely ineffective as the sessions were isolated, unconnected to established school goals, and lacked follow-up support. With these findings, Cohen and Ball stressed the absence of "evidence that these one-shot activities had any effect on teacher practice" (p. 17).

Although traditional professional development activities indicated unfavorable outcomes for their ineffectiveness, these experiences are still common in educational systems. In addition, the activities themselves may be effective, but the design and

implementation as a whole may be ineffective. For example, traditional professional development activities are usually of shorter duration, completed in isolation, and may exclude strategies for active learning of participants (Birman, Desimone, Porter, & Garet, 2000). Garet et al. (2001) studied a sample of 1,027 math and science teachers to determine the effects of the Eisenhower Professional Development program on teacher classroom practice. This study was pivotal for two main reasons. First, the findings were a reinforcement of earlier research demonstrating the limitations of the traditional model. Teachers involved in the study reported traditional activities had little impact on their knowledge, skills, or classroom teaching practice. Second, Garet et al. were able to identify essential core features and structures that had positive impacts on teachers' knowledge and skills, leading to changes in classroom practice. These core features of professional development included a focus on content knowledge, opportunities for active learning, and coherence with other learning activities. When these core features were apparent, the following structures could significantly be influential to teacher learning: form of activities, collective participation of teachers, and duration of activity. The work of Garet et al. was helpful in shifting the focus of professional development away from the traditional model. To build a new model for professional development, researchers have begun to focus on the critical features of professional development activities. More specifically, researchers have worked to identify "those characteristics of an activity that make it effective for increasing teacher learning and changing practice, and ultimately improving student learning" (Desimone, 2009, p. 183).

Definition of Effective Professional Development

As some researchers were highlighting the issues related to the traditional model of professional development (Cohen & Ball, 1999; Garet et al., 2001), others were beginning to identify an alternative model that would increase opportunities for schools to improve teacher practice through professional development (Blank et al., 2008; Desimone et al., 2002). One of the major differences with this reform model is the number of activities that could be part of professional development for educators. According to Garet et al. (2001) reform types of professional development

> differ from traditional professional development in several respects. In particular, reform activities often take place during the school day. In fact, some reform activities, such as mentoring or coaching, take place, at least in part, during the process of classroom instruction or during regularly scheduled teacher planning time. (pp. 920–921)

In addition to opportunities to participate in traditional workshops, researchers now recognize professional development can occur every time a lesson is taught, an assessment administered, a curriculum reviewed, or an article read (Desimone, 2009). With these powerful opportunities for learning, schools have the capacity to implement many new structures, such as study groups, action research teams, collaborative planning periods, observation protocols, peer coaching, and mentorships to support the development of their teachers (Guskey, 2000).

Research conducted in recent years has led to a consensus about the core features of effective professional development. As Desimone (2009) stated, recent research reflects "the characteristics of professional development that are critical to increasing

teacher knowledge and skills and improving their practice: (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation" (p. 183). This consensus is evident in government policy documents such as the No Child Left Behind Act (NCLB) of 2001. In NCLB (2001), high-quality professional development refers to activities helpful in improving and increasing teachers' knowledge of the academic subjects they teach, which are sustained and intensive, aligned with and directly related to state academic content standards, student academic achievement standards, and assessments.

As a follow-up to the work of Garet et al. (2001), Desimone et al. (2002) completed a longitudinal study using a purposefully selected sample of 207 teachers in 30 schools. In the study, the researchers sought to measure the effect of six key areas of professional development (reform type, duration, coherence, collective participation, active learning, and content focus) and asked teachers to describe a single professional development activity that had an effect on their practice. Unfortunately, only 18.7% of teachers within the sample had experienced reform type professional development activities in the previous year. Although only a small percentage of teachers had access to reform activities, teachers who had access to activities with collective participation, active learning, and a specific content focus demonstrated significant gains in teacher knowledge, when compared with teachers who had experienced traditional professional development activities. Furthermore, the researchers discovered a substantial benefit for teacher knowledge occurred when the focus of reform activities was on higher order instructional techniques or alternative assessment methods.

In another study, Blank et al. (2008) conducted an exploratory study of 25 professional development initiatives across 14 states. These initiatives were representative of current leading efforts to improve instructional methods of math and science in U.S. public schools. The researchers analyzed programs key features, methods, and findings of 41 evaluation studies of their effectiveness. Based on these analyses, eight of the programs had significant measureable influence on teacher instruction or student outcomes. The shared design characteristics of these programs included

- a strong focus on content or content pedagogy;
- an annual duration of 45–300 hours with offsite and school-based components;
- coherence with the participants school curriculum and goals;
- collective participation of teachers working in grade level teams; and
- active learning by developing and presenting sample lessons, coaching and mentoring, and pedagogical discussions.

The available research demonstrated that the reform model activities have been more effective in developing teacher knowledge, amending classroom practice, and improving student learning than traditional model activities.

A broad consensus exists among researchers and practitioners about the design of high-quality professional development for teachers. To have a significant impact on teaching practice, professional development has to be (a) intensive; (b) sustained over time; (c) directly related to teachers' work with students; (d) engaging teachers in active learning of the content to be taught and how to teach that content; (e) coherent with

district policies related to curriculum, instruction, and assessment; and (f) structured to regularly engage teachers in local professional development communities where problems of practice are solved through collaboration (Wei, Darling-Hammond, & Adamson, 2010). The following section includes the examination of each of the five core features of effective professional development by reviewing the most relevant studies for each specific feature.

Content Focus

Professional development opportunities must have an explicit focus on subject matter content and on how students learn for improved instruction to occur. Multiple studies have indicated a focus on content-specific pedagogy has had a strong positive effect on the teaching practices of educators (Wayne, Yoon, Zhu, Cronen, & Garet, 2008). As Desimone (2009) stated,

> a compilation of evidence in the past decade points to the link between activities that focus on subject matter content and how students learn that content with increases in teachers' knowledge and skills, improvements in practice, and to a more limited extent, increases in student learning. (p. 184)

Kennedy (1998) completed an early study that outlined the importance of pedagogical content focus. Kennedy randomly assigned 800 teachers to one of four professional development experiences with activities taking place over the course of a full school year. Although this study focused exclusively on math and science teachers, student test scores were consistently higher in classrooms, where the professional development experiences had a clear focus on pedagogical content knowledge. Kennedy concluded, "programs whose content focused mainly on teachers' behaviors

demonstrated smaller influences on student learning than did programs whose content focused on teachers' knowledge of the subject, on the curriculum, or on how students learn the subject" (p. 18). These conclusions have been helpful in setting the foundation for content-specific activities as a core feature of effective professional development programs.

With funding from the National Science Foundation, a professional development experience known as the local systematic change (LSC) has become a part of the teacher enhancement initiative in communities across the United States. The experience primarily includes a focus on developing the abilities of science teachers to utilize inquiry-based instructional methods in their classrooms and a focus on strong pedagogical content. As this work has taken place over a number of years, a number of researchers have utilized this population to gather data about the effectiveness of content-focused professional development experiences. Supovitz and Turner (2000) found these professional development activities had a positive impact on teacher practice. This study utilized a survey instrument to gauge whether teacher practice had changed after taking part in a series of professional development activities to promote inquiry-based teaching practice in science classrooms. Teachers and administrators from 24 communities across the United States completed the survey (n = 4,130) to provide their feedback about classroom practice prior to and following the professional development activities. Although the data collected was from the teachers involved and not through classroom observations, teachers who experienced activities with a more consistent focus on pedagogical content were much more likely to have increased their use of inquiry-based instruction within their classrooms.

Banilower, Heck, and Weiss (2005) also utilized this population to assess the impact of content-focused professional development experiences. This study included seven years of survey data collected from 18,657 teachers in 42 communities across the United States. The results of this study indicated teachers, who had taken part in the content-focused professional development experiences, felt more prepared pedagogically and improved perceptions of their grasp of the instructional content and strategies. Furthermore, with the collected data, Supovitz and Turner (2000) reinforced their findings: teachers, who had professional development experiences focused on pedagogical content, were more likely to utilize inquiry-based instructional approaches in their classroom.

Finally, Blank and de las Alas (2009) conducted a meta-analysis of 16 studies that had demonstrated significant effect sizes for professional development in relation to improving student achievement. Blank and de las Alas chose these studies from the initial sample of 400 because they featured the use of treatment and control groups, and provided adequate data to allow researchers to reanalyze effect size data. When looking at these studies, the researchers determined professional development is influential to teacher practice and student achievement. In addition, Blank and de las Alas reported several patterns within the studies that showed improved student achievement. When analyzing these studies, Blank and de las Alas found the program designs included a "strong emphasis on teachers learning specific subject content as well as pedagogical content for how to teach the content to students" (p. 27). These findings indicate the importance of content-focused professional development as a core feature of effective professional development for educators.

Active Learning

Active learning refers to professional development activities in which teachers can actively engage in meaningful discussion, planning, and practice. This type of learning includes the opportunity to (a) observe expert teachers and to be the subject of observation while teaching; (b) plan the use of new curriculum materials and new teaching methods in the classroom; (c) review student work in the topic area; and (d) lead discussions and engage in written work (Garet et al., 2001). Several studies have shown active learning as an essential feature of effective professional development programs.

Merek and Methven (1991) highlighted the importance of active learning within professional development programs focused on elementary school science teachers. Teachers involved in this study (n = 16) participated in a 100-hour summer institute, where they actively participated in a learning cycle. During this cycle, the researchers asked the teachers to explore a phenomenon, develop theories, and apply these theories to alternative contexts. Following this initial experience, teachers worked collaboratively to develop units and taught these units to other teachers involved in the program. Following the professional development, the researchers assessed the reasoning abilities of randomly selected students in classrooms. Although the pretests of students indicated no difference in student performance, posttests conducted indicated students in the participating teachers' classrooms outperformed their peers in control group classes.

A focus on active learning is vital when seeking to improve the knowledge of educators, which leads to changes in classroom practice. Supovitz, Mayer, and Kahle (2000) utilized survey data developed to measure the success of Ohio's discovery program, intended to promote inquiry-based instructional practices in schools across the

state. This program was an intensive 160-hour professional development experience conducted in the summer. The goals for the discovery program were to "expand the content knowledge of teachers through inquiry-based instruction, model inquiry teaching so teachers can experience how this pedagogical tool is applied to real world concepts, and relate course content to national science and math standards" (p. 335). Supovitz et al. surveyed the sample of 1,475 teachers once a year for three years after completing the professional development experiences. Although this study lacked a control group, these surveys indicated the active learning experiences were useful in improving the content knowledge of teachers involved and in increasing the use of inquiry-based instructional practices in teachers' classrooms.

Ingvarson, Meiers, and Beavis (2005) examined the effects of a variety of professional development programs on teachers' knowledge and practice. The sample for this study was 3,250 teachers, who had taken part in one of 80 individual professional development experiences of the Australian Government Quality Teacher Programme. Similar to earlier work Garet et al. (2001) conducted in the United States, Ingvarson et al. surveyed the educators involved in this program to determine the features of professional development most significantly influential to their teaching practice. Upon analysis of the data, this study showed the most effective professional development programs were consistent with prior research (Desimone et al., 2002; Garet et al., 2001). In addition, the most significant feature of effective professional development on teaching practice is the "extent to which individual programs provide many opportunities for active learning," according to Ingvarson et al. (p. 14).

Buczynski and Hansen (2009) completed a qualitative case study to investigate the impact of an intensive professional development program on a sample of 118 elementary school science teachers. Activities within the professional development program were "constructivist designed and offered teachers opportunities to interact through group work and hands-on [sic] experiences with science kits" (p. 601). Data gathered in multiple ways from the sample population included focus-group interviews, presubject and postsubject matter tests, teacher surveys, classroom observations, and student achievement scores. Upon analysis of these data, the researchers concluded the content knowledge of teachers had improved by an average of 34% on posttest knowledge assessment. Furthermore, when compared with a control group of students within the same schools, students with teachers who had taken part in the professional development experiences outperformed their peers on the California State Standards Assessment for science. Although a relatively small sample that only included students who took this assessment in fifth grade, the results have been helpful in demonstrating the inclusion of active learning within the core features of effective professional development.

Coherence

For professional development activities to be effective, educators must plan and organize individual activities to form a sustained, coherent program for teacher learning. For professional development to be coherent, these programs must include three requirements: dependent on the prior knowledge of teachers; aligned with local standards, frameworks, and assessments; and supportive of developing opportunities for teachers to engage in professional dialogue with other teachers focused on similar learning (Garet et

al., 2001). Traditional professional development activities can be disconnected from work taking place in the classroom or from policies being enacted by schools and districts (Desimone et al., 2009). However, a number of researchers have found coherent, professional development activities are positively influential to the teaching practice of educators.

Utilizing a combination of statistical analyses and qualitative fieldwork, Newmann, Smith, Allensworth, and Bryk (2001) sought to identify the impact of coherence on teacher practice and student achievement. Data gathered were from Chicago public school teachers, who completed surveys designed to measure instructional program coherence in 1994 (n = 5,358) and in 1997 (n = 5,560). In addition, Newmann et al. conducted field studies in 11 elementary schools within the district to ascertain the extent of instructional program coherence. Controlling for individual and school level characteristics (socioeconomic status, ethnicity, school size), Newmann et al. discovered a strong positive relationship between improving instructional program coherence and student achievement results in reading and math based on the Iowa Test of Basic Skills (ITBS). Throughout the study in 1994–1997, schools which "showed a substantial improvement in coherence achieved average ITBS scores that were almost one-fifth of a year of learning higher in 1997 than in 1994" (p. 306). Furthermore, students enrolled in schools, which declined in coherence during the study, fell behind their peers in schools, which had no change in measures of instructional program coherence.

Firestone, Mangin, Martinez, and Polovsky (2005) conducted a qualitative study comparing three school districts, which focused on pedagogical content and coherence

within their professional development programs. Focusing on low performing schools in New Jersey, Firestone et al. chose three districts to participate based on their willingness to work with the research team. Within each of these districts, Firestone et al. focused on four individual schools to conduct unstructured interviews with teachers and school leaders to learn about their professional development experiences. The findings from this study are difficult to generalize due to the small sample and use of self-reported data. However, Firestone et al. found teachers, who felt their professional development experiences were coherent, reported "learning more about state standards, content in mathematics and literacy, and more authentic, engaging instructional strategies" (p. 442). Furthermore, these teachers were more likely to have amended their classroom practice to align with the state standards and reported greater use of engaging instructional strategies.

Finally, Penuel, Fishman, Yamaguchi, and Gallagher (2007) conducted a study with 454 teachers who were taking part in a professional development program designed to help them implement materials for an earth science program called The Globe program. Penuel et al. conducted surveys with the teachers involved, as well as with the professional development providers to help determine the kinds of professional development activities associated with improved implementation of The Globe program. Based on their analyses of the data, Penuel et al. found coherence within the professional development experiences for teachers was useful in increasing their use of Globe protocols and their preparedness for student inquiry within their classrooms. Furthermore, Penuel et al. noted, "perceived coherence of teacher professional development has a positive impact on Globe program implementation" (p. 947). This finding is extremely

important in highlighting teacher perception of coherence has an impact on the implementation of initiatives through professional development experiences.

Duration

In addition to the other core features of effective professional development, the available literature has shown the need to sustain professional development over time, and for an adequate duration. Many of the studies in this review of literature have indicated that effective professional development programs include an intensive commitment and over 100 hours of work on the part of participants to create an impact on their practice (Banilower et al., 2005; Supovitz et al., 2000). Although no agreement has specified the amount of time required, the available literature consistently indicated at least 20 hours of contact time and sustained implementation of activities during a period (Desimone, 2009).

Carpenter, Feneman, Peterson, Chiang, and Loef (1989) investigated the impact of an increased duration of professional development activities on the practices of first grade teachers. Forty teachers participated in the study, with half randomly selected as the treatment and control groups. The treatment group experienced an intensive four-week summer workshop while the control group participated in two separate two-hour workshops. These experiences focused on the learning and teaching of addition and subtraction, with the treatment group focused on the concept of cognitively guided instruction. Following the professional development experiences, Carpenter et al. observed all 40 teachers within their classrooms throughout the year. Teacher beliefs regarding the learning and teaching of addition and subtraction were also measured using a 48-item survey. In addition, students in the 40 teachers' classrooms completed a series

of standardized assessments in mathematics throughout the year to help track their performance. Based on these surveys, observations, and assessments, the researchers determined the beliefs of teachers involved in the more intensive professional development experiences were more likely to have changed compared with the beliefs of teachers in the control group. Furthermore, Carpenter et al. observed the treatment groups to spend much more instructional time interacting with their students about math problems, and were more likely to allow students to use multiple strategies to solve problems. Although the differences in student achievement results only slightly favored the treatment group, students who performed at lower levels on pretests improved more dramatically on their posttest assessments within the treatment group classrooms.

Supovitz and Turner (2000) conducted a study to compare the effects of traditional and reform professional development activities. As part of the National Science Foundation Teacher Enhancement Program (NSF), Supovitz and Turner divided 5,000 teachers from 24 school districts into two groups. One group experienced a professional development program consisting of four separate one-day workshops held throughout the school year. A second group experienced a six-week summer institute followed by two days each month where they met to collaborate with other teachers involved in the program. Survey data collected from both groups of teachers indicated the one-day workshops had little effect on teachers' attitudes or habits, while the more sustained approach showed significant changes in attitudes and teacher practice within the classroom.

Johnson, Kahle, and Fargo (2007) conducted a quasi-experimental longitudinal study designed to measure the impact of sustained professional development activities on

student achievement in science. Johnson et al. focused on two middle school student populations in Ohio. Teachers at the treatment school took part in an initial summer program, which involved 80 hours of professional development. These initial sessions were followed by 36 hours of follow-up each year for three years. Teachers at the control school did not take part in any professional development. Students in both schools completed a standardized science assessment, known as the Discovery Inquiry Test (DIT) during their sixth, seventh, and eighth grade school years. Although little difference was apparent in student results during the first year of the study, students in the treatment group significantly outperformed their peers in the control group in the assessments conducted in the second and third year. These findings, although difficult to generalize due to the small sample and lack of variable controls, do indicate the need to sustain professional development over an adequate time.

In addition to the previous studies, Yoon et al. (2007) conducted a meta-analysis of the available research, which was useful in highlighting the importance of duration as a feature of effective professional development programs. Yoon et al. reviewed more than 1,300 studies to address the impact of professional development on student achievement. Sadly, they determined only nine of these studies met the standards outlined at the What Works Clearinghouse. Although this outcome is indicative of the difficulty of measuring the effectiveness of professional development based on improved student learning results, this study has been helpful in reinforcing the core features of effective professional development outlined in earlier research. Yoon et al. specifically noted studies which had

> greater than 14 hours of professional development showed a positive and significant effect on student achievement from professional development. The three studies that involved the least amount of professional development (5–14 hours total) showed no statistically significant effects on student achievement. (p. 12).

Furthermore, the results were even more significant when Yoon et al. (2007) limited the studies included to those focused on student achievement in mathematics assessments. Of the four studies, which measured student achievement gains in mathematics, the average student would have improved performance by 22%, if teachers had taken part in professional development activities ranging from 30 to 83 hours.

Collective Participation

Effective professional development programs also include the collective participation of groups of teachers in various activities. A criticism of traditional professional development was the isolation of teachers within their classrooms (Little, 1993). With the growing literature about effective professional development, the collective work of teacher teams has consistently been a core feature of best practice. As Birman et al. (2000) outlined, collective participation has been helpful in promoting improved pedagogy among teachers in a number of ways. First, with collective participation, teachers have the opportunity to integrate new instructional practices in partnership with other members of their team. As groups of teachers work together to attempt new instructional techniques, they are able to discuss their successes and challenges with their colleagues. Second, teachers who work within the same school or department can share successfully implemented resources and strategies within their own

classrooms. Finally, the collective participation of teachers can also contribute to a shared professional culture and promote a common understanding of instructional methods, problems, and solutions having positive impacts on teacher practice. Collective participation within school communities can take many forms. Peer observations, analysis of student work, study groups, and the establishment of professional learning communities are all structures schools have adopted to promote collective participation among their faculty members (Darling-Hammond & McLaughlin, 1995). These structures have been helpful in promoting professional dialogue among teams of teachers and a powerful form of teacher learning (Desimone, 2009).

The National Reform Faculty has a set of protocols designed to encourage the practice of Critical Friends Groups within school communities. These protocols encourage teachers to provide feedback and support for one another to help promote teacher learning and student achievement. Dunne, Nave, and Lewis (2000) conducted a study utilizing classroom observations and teacher interviews to determine whether these protocols helped teachers to improve their practice. They found teachers who participated in the Critical Friends Groups reported having more opportunities to improve their practice, implemented instructional strategies that were more student-centered, and focused more on student mastery instead of curriculum content coverage.

Saunders, Goldenburg, and Gallimore (2009) completed a longitudinal quasi-experimental study to investigate the effects of professional development activities designed to stabilize teacher teams and the use of explicit protocols for meetings. The project name was Getting Results, and the recipients of the five-year professional development program included principals and teachers working in nine schools within a

school district. During the first two years of the program (Phase 1), only principals undertook the training on the implementation of effective teaming structures and meeting protocols. Teachers received similar training during the final three years of the program (Phase 2). The training provided to teachers in the treatment group included emphasis on the following protocols to help them focus on their team meetings (p. 1016):

1. Identify and clarify specific and common student needs to work on together.
2. Formulate a clear objective for each common need and analyze related student work.
3. Identify and adopt a promising instructional focus to address each common need.
4. Plan and complete necessary preparation to try the instructional focus in the classroom.
5. Try the team's instructional focus in the classroom.
6. Analyze and see if student work is in line with the objective and evaluate the instruction.
7. Reassess: Continue and repeat cycle or move on to another area of need.

Using data compiled from observations, interviews, and focus groups, Saunders et al. (2009) concluded teacher meetings in the treatment schools had more focus on student academics, joint planning, purposeful use of assessment data, and the creation of agreements about the implementation and evaluation of classroom instruction. In addition, Saunders et al. analyzed student achievement data comparing students in the treatment and control groups of the study. Although little to no difference was apparent in student results during Phase 1 of the professional development activities, students in

the treatment schools vastly outperformed their peers during Phase 2 of the program. These results are helpful in demonstrating how individual teacher capacity can improve and develop through collective participation.

Although the literature indicated the inclusion of collective participation as a core feature of effective professional development, certain conditions must be present to attain positive impact on teacher practice. For example, when comparing two schools districts attempting to build teacher teams, Supovitz and Christman (2003) found, "only where communities focused on changing the instructional practices of their members was there a measureable impact in student learning" (p. 4). Within both districts, observations showed improved meeting structures, enhanced school cultures, and a greater willingness to change instructional practice. The results were uneven as improved practice was not evident among teams with minimal focus on instructional practice during their meetings. These findings are consistent with other studies indicating collective participation is only effective in certain situations. Louis, Marks, and Kruse (1996) found that smaller school size and the presence of common planning time for collaborative teams during the school day were helpful in improving collective participation within schools. In addition, researchers have identified social resources needed for effective collective participation. Specifically, supportive leadership, mutual respect, a willingness to take risks, and inclusive membership of community members are all conditions supportive of effective collective participation (Bolam, McMahon, Stoll, Thomas, & Wallace, 2005). Although the research indicated collective participation is a necessary feature of effective professional development, continuing research is necessary to understand the basic

conditions and supports required to ensure collective participation is positively influential to teacher practice.

Having a firm set of features to characterize effective professional development is essential to allow schools and organizations to determine the effectiveness of their development efforts within their institutions. Although consensus may exist among leading researchers about the characteristics of effective professional development, no standard measurement is consistently useful in measuring the effectiveness of professional development in some settings (Desimone, 2009). To continue the research within the field of effective professional development, valid use of instruments is essential to help assess the quality of opportunities provided to educators in school systems.

Current Status of Professional Development in School Settings

Even though a consensus exists within the research to support the characteristics of effective professional development, little evidence shows teachers in school systems have access to effective professional development opportunities. Studies conducted in U.S. public schools and U.S. independent schools have indicated professional development opportunities offered to educators fall short of agreed levels of effectiveness (Darling-Hammond et al., 2009; Murray, 2010; OECD, 2009). Unfortunately, researchers such as Sykes (1996) have been highlighting the inadequacy of professional development programs as a major concern for almost 20 years.

Darling-Hammond et al. (2009) conducted a large-scale study to assess the professional development opportunities provided to public school teachers in the United States. Survey information for this study came from the following sources:

- National Center of Education Statistics 2003–2004 Schools and Staffing Survey;
- MetLife Survey of the American Teacher;
- National Education Associations Survey of America's Teachers and Support Professionals on Technology; and
- National Staff Development Council Standards Assessment Inventory.

Darling-Hammond et al. (2009) analyzed data from these sources to determine whether current policies and practices are in line with what research shows to be effective professional development practices. Although some education systems were improving in offering effective professional development opportunities, the majority of the nation's teachers do not have access to regular opportunities for intensive learning. Overall, 92% of teachers reported attending a conference or workshop, but the learning lacked depth of content knowledge within a short duration (usually less than 16 hours). Teachers used their release time to attend professional development activities, but few had more than two days per year, which is below the necessary duration outlined in the available research. Almost half of the responding teachers were dissatisfied with their professional development opportunities, and only 59% believed the content-related learning was useful or very useful. Finally, teachers in the United States reported little collaboration in curriculum design or instructional practice. Overall, Darling-Hammond et al. (2009) concluded "the kind of high-intensity, job-embedded collaborative learning that is most effective is not a common feature of professional development across most states, districts, and schools in the United States" (p. 4).

In a similar study, Murray (2010) surveyed division principals from regular members of the National Association of Independent Schools (NAIS). He developed a

survey instrument called the Independent School Teacher Development Inventory (ISTDI) and collected responses from 2,472 divisional principals. Although research has shown principals often have higher means than those of teachers when rating school programs (Bingham & White, 1993; Desimone, 2006), the results clearly indicated NAIS schools are having difficulty providing teachers with access to effective professional development opportunities. Using descriptive statistics, Murray found professional development opportunities in NAIS schools consisted primarily of traditional activities (e.g., workshops, conferences, and short-term courses). Furthermore, the results indicated activities rarely extended over time, connected to teacher or student needs, involved collaboration of teachers, focused on content knowledge or pedagogy, or involved active learning on the part of educators. In conclusion, Murray stated "a significant gap exists between current professional development practices in U.S. independent schools and research-based practices of effective professional development" (p. 148).

Although these initial findings are disheartening, one would believe as the literature has evolved to better define effective professional development practices, the collective ability of schools to provide high-quality experiences would improve. Sadly, this has not been the case. In a second study commissioned by the National Staff Development Council, Wei et al. (2010) analyzed the data from the Schools and Staffing Survey over three administrations of the national survey (2000, 2004, and 2008). Based on this analysis, they found teachers in 2008 had fewer opportunities to participate in sustained professional development activities than they had in 2004. Furthermore, much of the professional development teachers had access to in 2008 included a focus on the

least effective models such as short-term workshops. Finally, only 16% of teachers in 2008 felt their schools promoted collaborative work, as opposed to 34% of teachers in 2000.

In addition to studies measuring the effectiveness of professional development programs in the United States, the Organization for Economic Co-operation and Development (OECD) recently completed an educational study for member countries (OECD, 2009). Using the Teaching and Learning International Survey (TALIS), the OECD sampled 20 teachers from 200 schools in 23 countries (n = 73,584), with a specific section of the survey devoted to questions regarding professional development. Overall, 89% of teachers participating in the survey engaged in professional development, with as many as 25% of teachers not participating at all in some countries (e.g., Denmark, Slovakia, and Turkey). On average, teachers participated in professional development for one day per month. That said, a significant portion of teachers thought their professional development had not met their needs, and over half wanted more professional development than they had received in the past 18 months. Teachers also reported about participation rates in specific types of professional development activities and the perceived impact of these activities. Strikingly, a vast discrepancy was evident between teachers' participation in activities, which they felt had the greatest impact on their practice, such as individual and collaborative research and qualification programs. Although over 85% of teachers reported moderate or high levels of impact, only 35% (individual or collaborative research) and 25% (qualification programs) of responding teachers participated in these activities. On the other hand, more than 70% of teachers participated in traditional professional development activities such as courses,

workshops, conferences, and seminars even though teachers reported lower levels of impact. Based on these findings, policy makers and practitioners must consider "how to support and encourage participation and how to ensure that opportunities match teacher perceived needs" (OECD, 2009, p. 78).

A common theme in the literature is the difference in professional development activities offered to teachers in elementary and secondary schools (Blank & de las Alas, 2009; Darling-Hammond et al., 2009; Murray, 2010). All three studies indicated elementary school teachers were more likely than secondary school teachers to participate in reform types of professional development during the school day. According to Darling Hammond et al., elementary schools had higher percentages of teachers (54%) taking part in active learning strategies than secondary schools (26%). Murray also highlighted similar findings and noted professional development programs for elementary school teachers are more likely to be connected to teacher needs, student needs, and school goals. Furthermore, activities for elementary school teachers were more likely to extend over time, embed into daily work, involve collaboration with other teachers, and include active learning strategies.

The available research has effectively shown a core set of features are necessary for effective professional development opportunities. In addition, researchers have begun to assess the extent to which current professional development practices are aligned with these core features in school systems. That being said, there is currently no research to assess the extent to which the professional development programs in international schools are aligned with the core features of effective professional development outlined in the available research.

History and Characteristics of American-Style International Schools

In 1888, American expatriates living in Mexico City, Mexico established the first of the American-style international schools (ASISs) intended solely to provide expatriate students with a comparable educational experience (Mott, 2012). As American citizens continued to live and work in countries other than the United States, academic leaders established additional schools to address the needs of these expatriate communities. Following World War II, the U.S. government began to take an active interest in the formation of overseas schools and began to provide specific funding to sponsor small groups of schools in Central and South America. This assistance program continued to expand with additional financial assistance provided to schools worldwide beginning in 1957 (Luebke, 1976). In 1964, the U.S. Department of State consolidated this program and established the Office of Overseas Schools. This American agency is helpful to provide affiliated schools with direct financial support through a grant process overseen by a director and six regional education officers (U.S. Department of State, n.d.). This support for American-sponsored overseas schools (ASOSs) has increased and in 2013, the provisions coming from the Office of Overseas Schools provided support to 197 schools and education for 135,359 students, with the service of 17,535 professional staff members (U.S. Department of State, n.d.).

The primary goals of ASOSs include showcasing American educational practice, demonstrating a commitment of democratic ideals, and increasing mutual understanding between American expatriates and local countries through American ideas, principles, and methods (U.S. Department of State, n.d.). As Orr (1974) stated, the presence of ASOSs is "a demonstration of American education. The school will be expected to

exemplify the valuable qualities and merits of a democratic educational system" (p. 10). Traditionally, these schools share common characteristics:

- private, nonprofit, nonsectarian institutions;
- located in major cities with U.S. embassies or consulates;
- governed by an elected/appointed Board of directors, often with participation of a U.S. embassy representative;
- composed of multinational student bodies with an average of 30% U.S. citizens, 30% host-country nationals and 40% third-country nationals; and
- composed of a professional staff with a majority holding degrees and citizenship from the United States.

However, many ASISs operate worldwide in addition to those within the sponsorship of the Office of Overseas Schools. The International School Consultancy (ISC) research organization has identified over 7,000 English language schools worldwide, teaching almost 3.8 million students and employing over 350,000 members of staff (ISC Research, n.d.). These numbers represent phenomenal growth in the number of ASISs over the past 20 years, and the ISC research organization has predicted that this number will continue to rise as demand for U.S.-based, English-medium education increases in many countries worldwide (ISC Research, n.d.).

Researchers traditionally have commented that no statement about international schools would apply without exception (Berman, 1997; Hartt, 1995; Mott, 2012; Orr; 1974), but general characteristics are often useful when describing ASISs. As Mott (2012) described, the ASISs

- offer U.S.-based curricula, international curricula, the IB program, and local national curricula;
- serve an international student body including U.S. citizens as well as host-country nationals and third-country nationals from countries other than the host country and the United States. Many schools boast their student body consists of students from more than 30 countries;
- have graduates attending several of the top universities in the United States;
- have a professional staff composed of mostly fluent English speakers. The staff members are often divided into three groups: U.S. citizens, host-country nationals, and third-country nationals, who frequently include citizens of Canada, the United Kingdom, Oceania, and a number of other countries;
- head of school is in charge of the overall operation of the school. A Board of Directors, which is the school's governing body, hires the head of school, accountable to the Board;
- accreditation comes from one of the five regional accrediting agencies in the United States:
    - AdvancEd
    - Middle States Association of Colleges and Schools (MSA)
    - New England Association of Colleges and Schools (NEASC)
    - Northwest Accreditation Commission (NWAC)
    - Western Association of Schools and Colleges (WASC); and
- members of one of the regional support agencies including, but not limited to the
    - Association of American Schools in Central America (AASCA)

- Association of American Schools in South America (AASSA)
- Association of Columbian-Caribbean American Schools (ACCAS)
- Association of International Schools in Africa (AISA)
- East Asia Regional Council of Overseas Schools (EARCOS)
- European Council of International Schools (ECIS)
- Near East South Asia Council of International Schools (NESA).

One of the largest regional support agencies for ASISs is the EARCOS, whose member schools are primarily private institutions, predominantly following an American-based curriculum model. Though they may share many characteristics with American public and private schools, they often operate in virtual isolation with rare links to similar schools. Even though the EARCOS schools are isolated, they share many of the same issues currently affecting schools in the United States. Some studies completed in the United States indicated the effectiveness of professional development programs in public and private schools (Darling-Hammond et al., 2009; Murray, 2010), but no such studies have included a focus on the effectiveness of professional development in EARCOS schools. Understanding the effectiveness of these programs is important to identify possible gaps and facilitate the improvement of professional development programs offered to educators in these schools. Furthermore, despite a significant investment in professional development by many EARCOS schools, no research indicated the types of professional development experiences educators in EARCOS schools can access. This study can be useful to EARCOS schools in determining whether their extensive investments provide educators' with access to effective professional development experiences.

Summary

Although the body of research remains scant, efforts to implement effective professional development programs in several settings have been unsuccessful. The findings from the limited research have clearly indicated U.S. public and private schools have no consistent implementation of effective professional development programs (Darling-Hammond et al., 2009; Murray, 2010). In addition, findings from OECD (2009) have indicated similar issues in countries around the world. In spite of these findings, efforts have not been in vain, as the analysis contains information, which can be useful for the improvement of these schools. These findings, however, are inapplicable for the ASISs in many countries around the world. As no research has indicated the status of professional development programs offered to teachers in ASISs, articulating which improvements are necessary within this environment is difficult. The intention for this study is to assess the status of professional development opportunities within EARCOS member schools. Beginning to assess the effectiveness of their professional development programs is imperative, if ASISs have the expectancy to improve teacher instruction and ideally, student learning. This study can be useful in assessing the extent to which professional development opportunities align with professional development practices identified by leading researchers.

CHAPTER 3

Methodology

This chapter includes the purpose of the study and the guiding research questions. Information is provided describing the population and sample, instrumentation, data gathering methods, and data analysis procedures utilized in this study.

The purpose of this study is to investigate the extent to which current professional development practices in EARCOS member schools correspond with standards of best practice for professional development. The study also seeks to identify the professional development opportunities provided to teachers in EARCOS member schools. Finally, the study is an attempt to discover the professional development experiences teachers believe are most and least effective for their development. The study includes the following research questions:

1. To what extent are professional development practices in EARCOS member schools consistent with research-based principles of effective professional development?
2. To what extent do differences exist in professional development practices and the following organizational level variables?
    a. School division in which educators work (elementary and secondary)
    b. Proprietary status of schools (nonprofit vs. proprietary)
    c. Curriculum framework (IB vs. non-IB)
3. To what extent do differences exist in professional development practices and the following individual teacher variables?
    a. Years of experience

b. Status of contract (overseas hire vs. local hire)

c. Role within the school (core area teachers vs. special area teachers)

4. What are the most prevalent professional development experiences in EARCOS member schools?
5. According to educators employed in EARCOS member schools, which professional development experiences are

   a. most effective for their development as educators?

   b. least effective for their development as educators?

Population

In an attempt to build collaborative networks and support internationally minded schools, regional professional development organizations have emerged. One of the largest of these organizations is EARCOS. As stated in their constitution, EARCOS "serves to promote cooperation and communication among its members, to advance the professional growth of schools and individuals and to broaden and enrich the educational opportunities of students we serve" (EARCOS, 2014a, p. 1). EARCOS membership is for schools whose primary purpose is to provide an American style of educational program for an international student body. This membership, however, is not for schools whose students are predominantly host-country nationals.

EARCOS currently has a membership of 142 schools (EARCOS, 2014b). For schools to obtain regular membership in EARCOS, they must adhere to the following standards (EARCOS, 2014b, p. 10):

A. Member schools shall provide a program of instruction internationally minded in style and substance; delivered through the medium of the English language; appropriate for the ages, needs, and abilities of the students enrolled in the school.
B. The member school shall be accredited by an organization recognized by the EARCOS Board of Trustees.
C. The member school's governing body shall generate the necessary revenue and expend appropriately to ensure resources for the provision of appropriate staff, facilities, equipment, and materials to support the school's stated mission.
D. The member school shall maintain facilities and equipment to meet applicable health, fire, safety, and sanitary regulations.
E. The school shall have a full public disclosure of its mission, policies, programs, and practices.
F. The stated mission of the school shall have a high degree of congruence with its actual programs and practices.
G. The member school shall demonstrate continued alignment and commitment to the purposes of EARCOS as determined by the Board of Trustees, including active participation in annual conferences and teacher workshops.
H. Candidate schools for membership shall make provision for a premembership site visit and shall make available the required information as set out and determined by the Board of Trustees.
I. Candidate schools shall accept that the ultimate authority for membership and continued membership of EARCOS resides with a majority vote of the EARCOS Board of Trustees.

The population for this study will consist of all teachers currently contracted to work in regular member schools of EARCOS. The estimated population according to the EARCOS database is 12,484 teachers (retrieved on June 23, 2014). Appendix A contains a listing of the EARCOS member schools and the number of teachers in each school. Table 1 shows a listing of the frequency and percentage of teachers working in EARCOS member schools by proprietary status and student enrollment levels.

Table 1

Frequency and Percentage of Teachers Working in EARCOS Member Schools With Organizational Level Variables

Organizational level variables	Category	Teachers	
		F	%
Proprietary status	Nonprofit	10,231	81.95
	Proprietary	2,253	18.05
Student enrollment	Less than 500	2,705	21.67
	500–999	5,178	41.47
	1,000 or greater	4,601	36.86

Sample

The entire population of EARCOS member teachers will serve as the sample. To determine the responding sample size, I conducted a power analysis using the standard alpha level of .05, the beta level of .20, and identifying the critical effect size of .20, leading to a calculated power of .80. Based on an estimated population (12,484), the target sample size given these specifications would be 192. Due to the length of the survey, I expected a return rate of at least 15%, which is conservative, based on response rates for prior studies conducted in EARCOS member schools (Wilder, 2006).

Data Gathering

All school heads of full member EARCOS received an initial email (Appendix B) requesting participation in the study, describing the nature of the study and outlining specific procedures for participation including a link to the International School Professional Development Inventory (ISPDI; Appendix C). I asked school heads to send an email (Appendix D) to all of their teachers. I requested teachers to respond to the ISPDI using the attached link. I also informed the school head and teachers that all data will be kept securely on a personal computer using dual password protection to maintain participant anonymity. In addition, I will report only aggregate data. I sent follow-up emails to school heads after one week (Appendix E) and three weeks (Appendix F). I sent these reminders to each head of school, asking them to resend the instructions for completing the survey to their faculty members (Appendix D). To help encourage participation in the study, incentives became part of my offer to heads of schools and participating teachers. Heads of schools able to encourage more than 10 teachers to participate in the survey received a summary of the survey results for their individual schools; they may find the summary of survey results helpful as they improve their future professional development plans and programs. In addition, I conducted a random draw, inclusive of all participating schools, and the drawn school received one free delegate registration at the 2015 EARCOS Leadership Conference. I also conducted draws for participating teachers to win one of five 50-dollar gift certificates from Amazon.

Description of the Instrument

The instrument designed for this study is the ISPDI (Appendix C), derived from a parent instrument called the ISTDI (Murray, 2010). This instrument is useful in assessing

the extent to which independent school division heads believed their professional development practices were consistent with research-based principles of effective professional development (Murray).

The purpose of the ISTDI was to elicit information about the status of professional development programs and the extent to which practice is in line with research-based principles of effective professional development in U.S.-based independent schools. The ISTDI design is applicable for measuring (a) the prominence of traditional professional development programs, such as workshops, speakers, short-term courses; and (b) the five core characteristics of effective professional development programs, such as content focus, duration, coherence, collective participation, and active learning (Murray, 2012). The ISTDI is a 39-item survey composed to measure six factors, with each factor represented by five to eight items. The questionnaire measures teachers' perceptions with responses to items using the following Likert scale: 1 = Never, 2 = Seldom, 3 = Sometimes, 4 = Frequently, and 5 = Always.

In addition to the questions outlined in the ISTDI, I have added one more two-part question to the ISPDI. I added the first part of the question to the questionnaire to determine the specific types of professional development experiences accessible to teachers in the EARCOS region. Then I added the second part of the additional question to ascertain which experiences teachers in the EARCOS region felt were the most or least effective for their professional development. This additional question was developed for a survey of the OECD and was included in the Teaching and Learning International Survey (TALIS) in 2008 and 2013 (OECD, 2009, 2014).

To collect data, all participating teachers completed the revised ISPDI (Appendix C) online, from which I was able to gather the results.

Evidence of Content Validity

The development of the ISTDI (Murray, 2010) was intended for assessing the extent to which professional development practices in U.S. independent schools were consistent with research-based principles of effective professional development. Content validity for this instrument was verifiable in four ways (Murray). First, an invited group of expert researchers was to provide, upon request, feedback on the quality of the survey items. Second, the questionnaire recipients included 10 independent school leaders; nine of them provided feedback on the original questionnaire. Third, a group of former independent school division heads piloted the revised questionnaire. Participants in the pilot study provided feedback on the length of the survey, design of the survey, and clarity of the questions. Fourth, 12 of the 15 former independent school division heads, who completed the questionnaire, were interview participants. The interviews were helpful to detect any misinterpretations of the survey questions and feedback from these interviews resulted in the modification of four questions (Murray).

Evidence of Factor Validity

The ISTDI reflected six characteristics of professional development identified in the current literature: traditional professional development, pedagogical content focus, coherence, duration, active learning, and collective participation (Murray, 2012). Therefore, the survey items related to each of these six areas would have positive correlations with one another, forming six individual factors (Murray). To establish factor validity of the instrument using data from the study, the researcher split the total

responses in half and analyzed the first half of responses (n = 1237) through an exploratory factor analysis. The researcher utilized a number of criteria, including the K1 rule, examination of the resulting scree plot, parallel analysis, Velicer's minimum average partial test, and interpretability of the factor solution to determine the number of factors to retain (Murray). Four factors (traditional professional development, pedagogical content focus, coherence, and duration) remained consistent, while the 15 items measuring active learning and collaboration emerged as the fifth factor based on the results of the exploratory factor analysis (Murray).

Once the exploratory factor analysis was complete, the second half of responses from the study (n = 1,237) became subject to a confirmatory factor analysis to test the five-factor model. Although the chi-square (χ^2) values indicated the model did not fit the data, additional indices, such as the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) showed additional support for the five-factor structure of the ISTDI established by the exploratory factor analysis. Table 2 shows a listing of analysis of the model fit tests and indices from the confirmatory factor analysis (Murray, 2012).

Table 2

Model Fit Tests and Indices for Confirmatory Factor Analyses of the ISTDI

Category	χ^2	*df*	*p* value	*RMSEA*	*CFI*	*TLI*
Model	5484.78	695	< 0.01	0.057	0.953	.945

Evidence of Reliability

Establishing internal consistency for the ISTDI was possible by using the entire sample and calculating Cronbach's alpha (α). The value of alpha coefficients can range from 0 to 1, with researchers generally regarding reliability coefficients above 0.7 to be

acceptable (Stevens, 2002). The alpha coefficient scores for the ISTDI ranged from .93 to .95 (Murray, 2012). Table 3 shows the alpha coefficients for the five factors retained, as well as the means and standard deviations (Murray, 2012).

Table 3

Factor Reliabilities and Scale Properties

Factor	No. of items	α	*M*	*SD*
Active learning and collaboration	15	.95	2.17	0.76
Content focus	6	.93	3.47	0.71
Coherence	7	.94	2.92	0.82
Traditional professional development	5	.95	4.50	0.68
Duration	6	.93	1.42	0.81

Note. α = Cronbach's alpha coefficient; *M* = mean; *SD* = standard deviation.

Content Validity for the Effectiveness of Professional Development Instrument

The ISPDI has one additional question useful in expanding the purpose of the ISTDI with the intent to elicit information about the specific types of professional experiences EARCOS teachers have access to, and which experiences they believe are most and least effective. This specific question was used in another study, the TALIS, which the OECD conducted in 2008 and 2013 (OECD, 2009, 2014). The professional development experiences included in the question were either generated specifically for the TALIS or borrowed from similar instruments as follows:

- IEA Progress in International Reading Literacy Study teacher questionnaire;
- World Education Indicators Survey of Primary Schools; and
- The U.S. Department of Education Schools and Staffing Survey (OECD, 2009).

With the analysis of the types of experiences included in the question and the use of this specific question in such reputable studies, I believe that face and scope validity have been sufficiently established.

Pilot Study of the ISPDI

The creation of the ISPDI is useful for assessing the extent to which professional development practices in EARCOS member schools are consistent with research-based principles of effective professional development. Furthermore, with the ISPDI, the professional development opportunities provided to teachers become identifiable with which opportunities teachers believe are the most and least effective in EARCOS member schools. The ISPDI consists of demographic questions (8), items of the ISTDI (39), and an additional item consisting of a two-part question from the TALIS. Although extensive work has been completed to establish content validity for the ISTDI (Murray, 2010), conducting a pilot study of the ISPDI with a group of international school teachers was essential to ensure content validity, assess the clarity of directions, and determine the time to complete the instrument.

Selected to participate in the pilot study was one international school not currently a member of EARCOS. The school principal received an email with the request for participation in the pilot study (Appendix G) and providing directions to send to all teachers requesting their participation in the study by clicking on the link to the ISPDI. In total, 19 responses were collected. In addition, all participants were asked to complete the pilot study response sheet (Appendix H) to gather information on the clarity of directions and time required for completion. Upon analysis of this feedback, the survey excluded two questions. One question was repetitive, and answers to a question related

to school governance indicated teachers were unaware of the governance models for international schools.

Data Analysis

Descriptive statistics (frequencies, means, and standard deviations) were useful in addressing the first research question, "*To what extent are professional development practices in EARCOS member schools consistent with research-based principles of effective professional development?"* In addition, I calculated Cronbach's alpha coefficient to determine the relationships among items within each hypothesized factor of the ISPDI. Finally, I conducted a confirmatory factor analysis was conducted to examine whether the items were organized in ways consistent with the core features of effective professional development programs, as evidenced in prior research and hypothesized by the researcher.

Data gathered through the ISPDI items were utilized to answer Questions 2 and 3, "*To what extent do differences exist in professional development practices and the following organizational/individual level variables?"* The organizational level variables (school division, proprietary status, and curriculum framework) and individual level variables (status of contract and role within school) were captured with multivariate analysis of variance (MANOVA) tests, using factors the confirmatory factor analysis identified. In addition, I used multivariate regression to analyze the links between the ISPDI factors and the individual level variables, years of experience, status of contract, and role within the school.

Descriptive statistics and *t* tests were utilized to analyze Research Questions 4 through 5b. I used percentages and frequencies to identify (a) the most prevalent

professional development experiences in EARCOS member schools and (b) the professional development experiences teachers find to be most and least effective. Table 4 shows a listing of the research questions, the corresponding items on the instrument, and the analysis methods utilized to analyze each research question.

Table 4

Research Questions, Corresponding Items on Survey, and Methods of Analysis

Research question	Items on survey	Methods of analysis
1. To what extent are professional development practices in EARCOS schools consistent with research-based principles of effective professional development?	11–49	Analysis of mean scores and standard deviations Confirmatory factor analysis Cronbach's alpha coefficient
2. To what extent do differences exist in professional development practices and the following organizational level variables? a. School division in which educators work (elementary and secondary) b. Proprietary status of schools (nonprofit vs. proprietary) c. Curriculum framework (IB vs. Non-IB)	5–8	MANOVA tests
3. To what extent do differences exist in professional development practices and the following individual level variables? a. Years of experience b. Status of contract (overseas hire vs. local hire) c. Role within the school (core area teachers vs. specialist area teachers)	2–5	MANOVA tests Multivariate regression of years of experience on the scores of the factors in the ISPDI
4. What are the most prevalent professional development experiences in EARCOS member schools?	50	Descriptive statistics
5. According to educators employed in EARCOS member schools, which professional development experiences are a. most effective for their development as educators? b. least effective for their development as educators?	50	Descriptive statistics Frequencies and percentages *t* tests

Note. IB = International Baccalaureate; ISPDI = International Schools Professional Development Inventory.

CHAPTER 4

Results

The purpose of this study was three-fold. First, I sought to assess the extent to which professional development within EARCOS member schools was consistent with research-based principles of effective practice. Second, I sought to identify the professional development opportunities provided to teachers in EARCOS member schools. Third, I sought to discover the professional development experiences teachers believe are most and least effective for their development. Following are the research questions in this study:

1. To what extent are professional development practices in EARCOS member schools consistent with research-based principles of effective professional development?
2. To what extent do differences exist in professional development practices and the following organizational level variables?
    a. School division in which educators work (elementary and secondary)
    b. Proprietary status of schools (nonprofit vs. proprietary)
    c. Curriculum framework (IB vs. Non-IB)
3. To what extent do differences exist in professional development practices and the following individual teacher variables?
    a. Years of experience
    b. Status of contract (overseas hire vs. local hire)
    c. Role within the school (core area teachers vs. special area teachers)

4. What are the most prevalent professional development experiences in EARCOS member schools?
5. According to educators employed in EARCOS member schools, which professional development experiences are
    a. most effective for their development as educators?
    b. least effective for their development as educators?

Responses

Data to address the research came from responses to ISPDI (Appendix C). The ISPDI was sent to all EARCOS regular member school heads. Upon request, school heads distributed the survey to their teaching faculties and teachers, who, upon request also, completed the ISPDI electronically. The target sample size was determined from a power analysis using the standard alpha level of .05, the beta level of .20, and identifying the critical effect size of .20, leading to a calculated power of 80. Based on an estimated population of 12,484, the target sample size given these specifications would be 192. The return rate exceeded the target sample size, with 675 respondents; 47 schools participated with at least one respondent completing the ISPDI. For a listing of the participating schools and the number of valid teacher responses, see Table G1 (Appendix G).

Overall, the data from the sample is representative of the EARCOS population. Based on demographic factors collected from the survey (proprietary status and school size), the percentages of responses were consistent with the population of teachers within the EARCOS region. However, with regard to student enrollment, medium schools (500–999 students) were underrepresented and large schools (more than 1000 students)

were overrepresented. Tables 5 and 6 show listings of the demographic data of teachers working in EARCOS member schools with organizational level variables and the demographic data of respondents to the ISPDI.

Table 5

Frequency and Percentage of Teachers Working in EARCOS Member Schools, by Proprietary Status

Proprietary status	Population		Sample	
	N	%	*N*	%
Nonprofit	10,231	81.95	538	81.89
Proprietary	2,253	18.05	119	18.11

Table 6

Frequency and Percentage of Teachers Working in EARCOS Member Schools, by Student Enrollment

Student enrollment	Population		Sample	
	N	%	*N*	%
Less than 500	2,705	21.67	170	25.53
500–999	5,178	41.47	120	18.02
More than 1000	4,601	36.86	376	56.46

Data Analysis

Since the survey items from the ISPDI were developed based on the characteristics of effective professional development identified in the available literature, I expected each area would be correlated with one another, forming five factors. In a previous work, Murray (2010) found the survey items formed five factors: active learning and collaboration; content focus; coherence; traditional professional development; and duration. The decision then was to use a confirmatory factor analysis to test this hypothesis about the number of factors in the ISPDI (Pedhazur & Schmelkin, 1991).

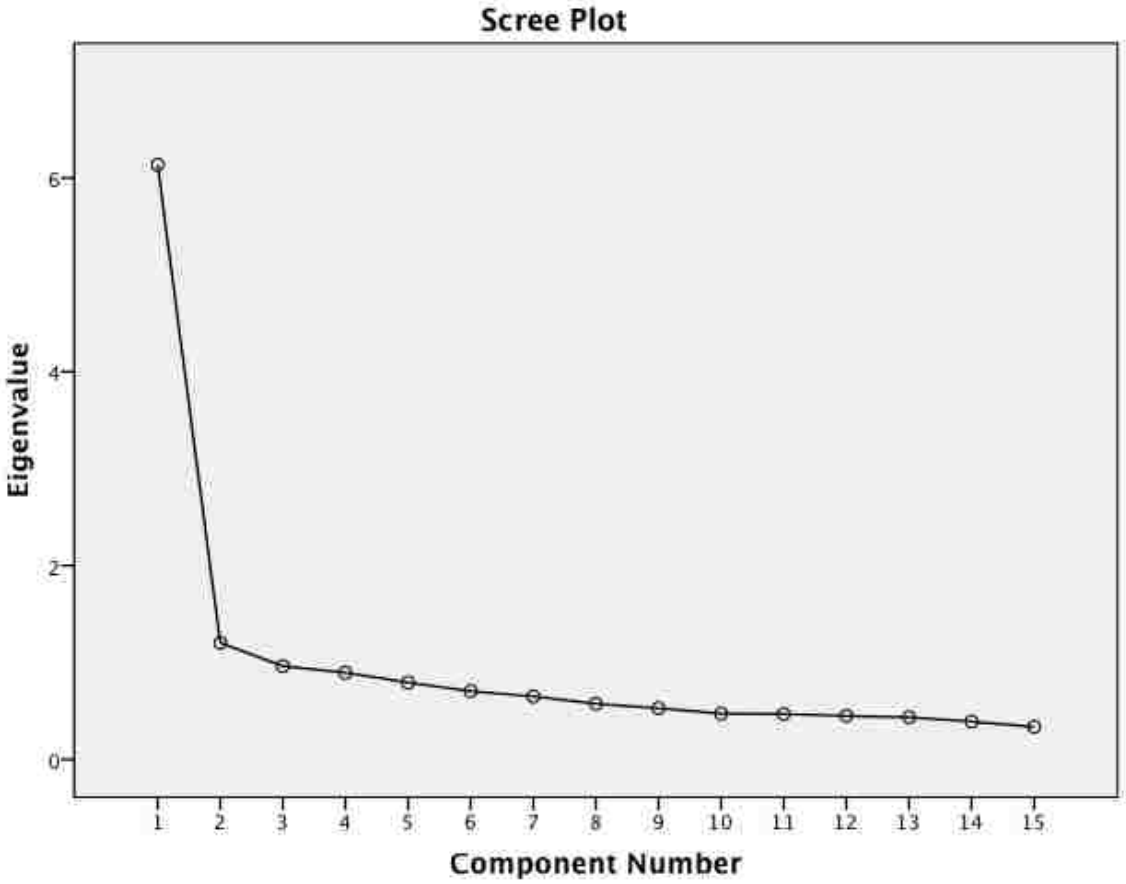
Prior to conducting the confirmatory factor analysis, I examined each set of items with the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity to determine whether the data was appropriate for analysis. The KMO measures for sampling adequacy ranged from .69 to .93 for a number of factors. According to Norušis (1994), these measures are all within the acceptable range for valid analysis. Table 7 shows the results from this initial analysis.

Table 7

Results of the Kaiser–Meyer–Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity

Factor	KMO	χ^2 (approx.)	*df*	Sig.
Active learning and collaboration	.93	2983.53	105	.000
Content focus	.85	1064.83	15	.000
Coherence	.79	863.26	21	.000
Traditional professional development	.69	659.65	10	.000
Duration	.83	1229.88	15	.000

The first factor Murray (2010) identified was active learning and collaboration. The KMO measure of sampling adequacy was .93, considered extraordinary (Norušis, 1994). The initial principal component analysis included two factors from the data. The scree plot (Figure 2) shows two components producing eigenvalues greater than 1, which led to subsequent analysis (Norušis, 1994).



The first component matrix did not show a clear interpretation of the results, so I conducted a varimax rotation to search for an underlying structure. The varimax rotation did not show an ideal solution with two items loading on both identified factors. I used a loading criterion of .40 and, therefore, conducted an oblimin rotation. The analysis of this rotation indicated a simple solution with each item loading on one of the identified factors. The one exception was item 40 (*"Our professional development activities take place on weekdays between 8:00 a.m. and 3:00 p.m."*) which did not load on either factor. Based on this analysis, the decision was to identify two separate factors: Active learning, support, and collaboration during instruction (ALSCDI); and Collaboration

while planning instruction (CPI). Table 8 shows a listing of the oblimin rotation pattern matrix.

Table 8

Pattern Matrix [a]

Pattern	Component	
	1	2
Teachers have opportunities to practice skills gained during professional development prior to integrating the skills into classroom instruction.	.76	
Teachers have opportunities to apply and practice new skills during professional development activities.	.76	
We select and design professional development activities based on analysis of our students' needs.	.75	
Structured support is provided for teachers implementing new skills until they become a natural part of their classroom instruction.	.74	
Beginning teachers have formal opportunities to work with mentor teachers.	.73	
Professional development activities include opportunities for teachers to observe and critique each other.	.73	
Professional development activities include peer coaching.	.70	
Teachers participate in setting the goals of the professional development program.	.63	
Professional development activities include opportunities for teachers to collaboratively examine and discuss student work.	.61	

Pattern	Component	
	1	2
Soon after returning from off-site professional development experiences, teachers formally share their learning with their colleagues.	.51	
Formal training is provided for teachers on how to effectively collaborate with each other.	.50	
Research-based best practices inform the professional development activities in our school.	.49	
Our professional development activities take place on weekdays between 8:00 a.m. and 3:00 p.m.		
Teachers plan instruction together.		.86
Teachers meet by grade-level to discuss instruction and student learning.		.81

a. Identified pattern.

Researchers generally regard reliability coefficients above 0.7 to be acceptable (Stevens, 2002). Based on this measure, Factors 1 (ALSCDI) and 2 (CPI) were appropriate for analysis with respective alpha coefficients of .89 and .70.

The second factor Murray (2010) identified was content focus. The KMO measure of sampling adequacy was .85, considered meritorious according to Norušis (1994). As outlined in Figure 3, the initial principal component analysis found all items compose a unidimensional construct, loading on a single construct accounting for 52% of the variance.

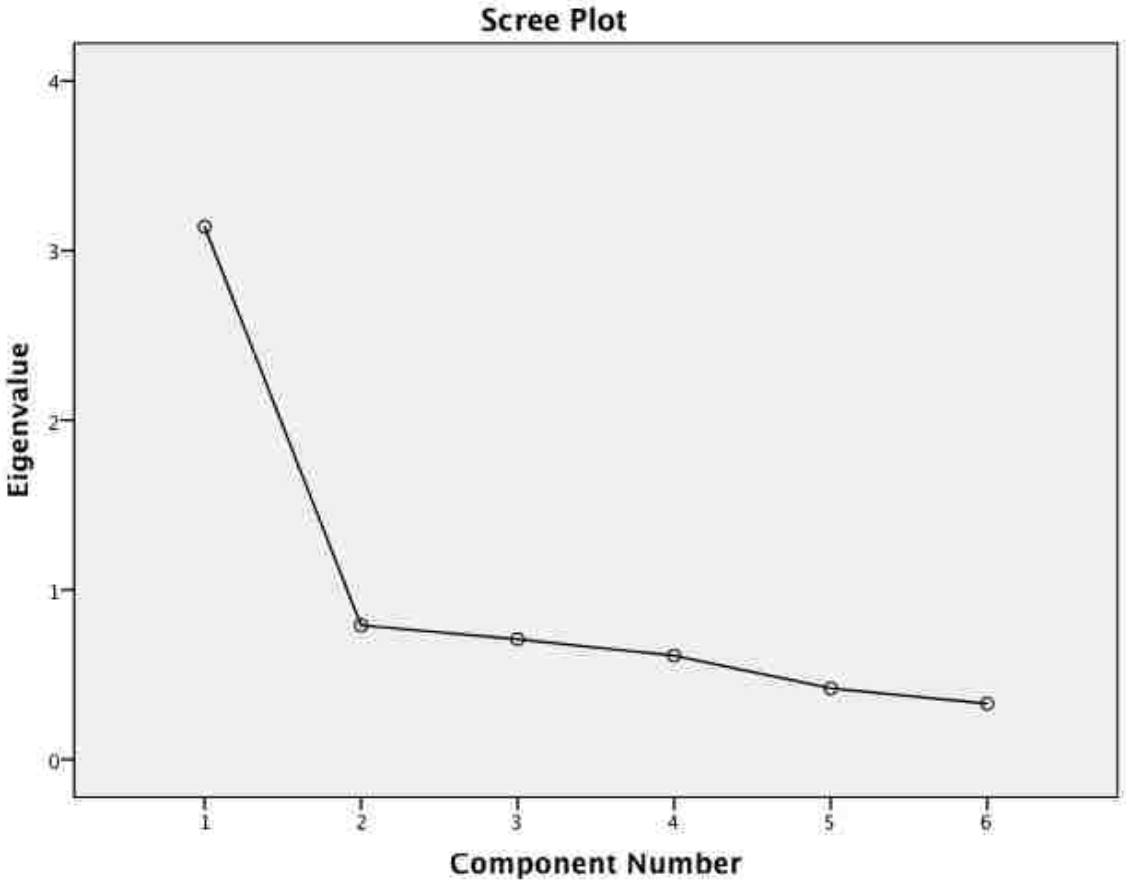


Figure 3. Content focus scree plot.

Table 9 shows a listing of the principal component matrix.

Table 9

Content Focus Principal Component Matrix [a]

Focus	Component
	1
We design and select professional development activities to help teachers learn instructional methods for specific academic disciplines.	.85
Professional development activities are focused on helping teachers understand how students learn best in specific content areas.	.84
Professional development is focused on helping teachers better understand the content of their academic discipline.	.72
Professional development activities focus on specific pedagogical skills.	.70
We select and design professional development activities related to teachers integrating technology into their specific content areas.	.62
Teachers meet by content area to discuss instruction and student learning.	.57

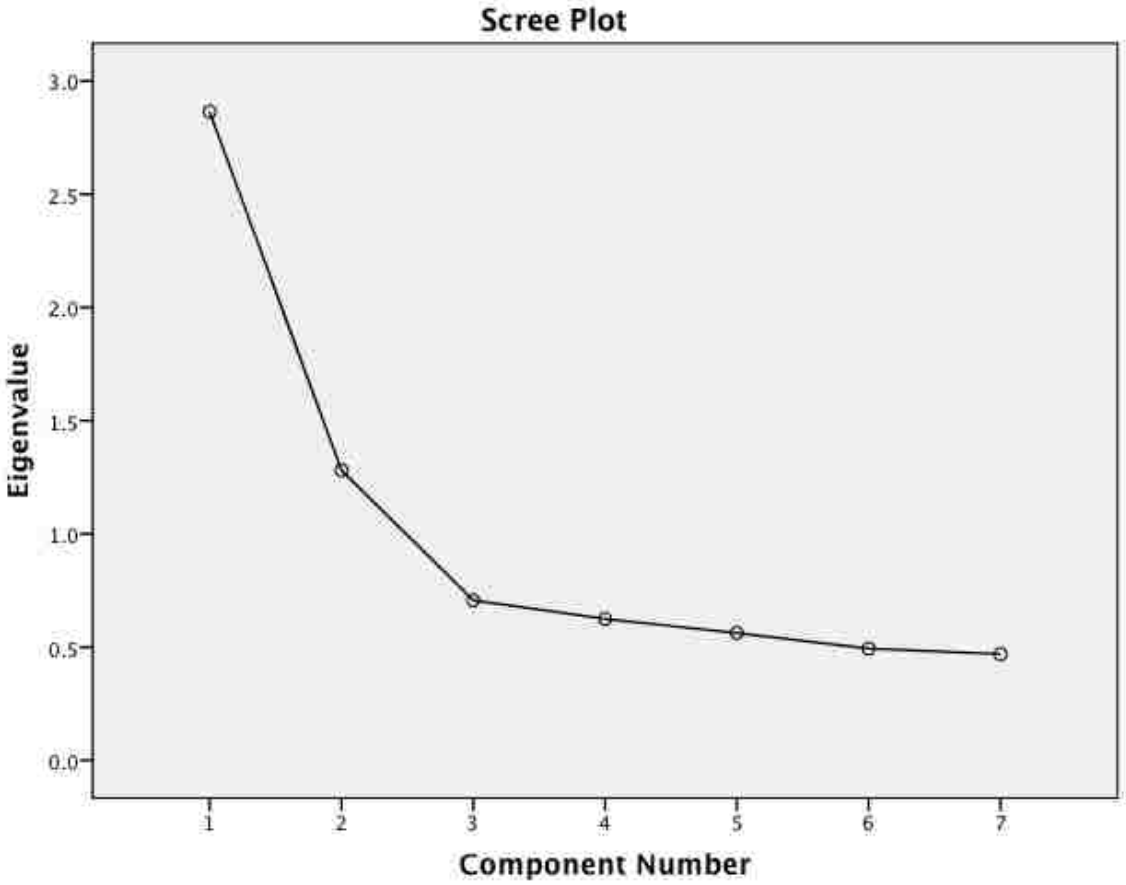
Extraction method: principal component analysis.

a. One component extracted.

The Cronbach's alpha coefficient provides further justification for combining these items as a factor for further analysis (.81).

The third factor Murray (2010) identified was coherence. The KMO measure of sampling adequacy was .79, considered to be between meritorious and middling (Norušis, 1994). The initial principal component analysis extracted two factors from the data. The

scree plot (Figure 4) shows two components producing eigenvalues greater than 1, which led to subsequent analysis (Norušis, 1994).



The first component matrix did not show a clear interpretation of the results, so I analyzed varimax rotation to search for an underlying structure. The varimax rotation indicated an ideal solution with each item loading on one of the identified factors. Based on this analysis, the decision was to identify two separate factors: coherence and onsite professional development. Table 10 shows a listing of the rotated component matrix.

Table 10

Rotated Component Matrix [a]

Focus	Component	
	1	2
Specific teacher needs to inform the selection and design of our professional development activities.	.79	
Professional development activities are aligned with the curriculum.	.77	
Teachers are involved in selecting and designing the specific activities of our professional development program.	.75	
Professional development activities relate directly to our institutional goals.	.64	
Teacher professional development is part of our school improvement plan.	.59	
Professional development activities occur onsite at our school.		.83
Our school personnel conduct our professional development activities.		.82

Extraction method: principal component analysis.
Rotation method: varimax with Kaiser normalization.
a. Rotation converged in three iterations.

Researchers generally regard reliability coefficients above 0.7 to be acceptable (Stevens, 2002). The items related to coherence had a Cronbach's alpha coefficient of .77, and the two items related to onsite professional development had a Cronbach's alpha coefficient of .63. Although the coefficient for onsite professional development was below the .7 threshold, the decision was to include this component for further analysis due to the relationship between the extracted items.

The fourth factor Murray (2010) identified was traditional. The KMO measure of sampling adequacy was .69, considered to be between middling and mediocre (Norušis, 1994). As outlined in Figure 5, the initial principal component analysis found all items compose a unidimensional construct, loading on a single construct accounting for 48% of the variance.

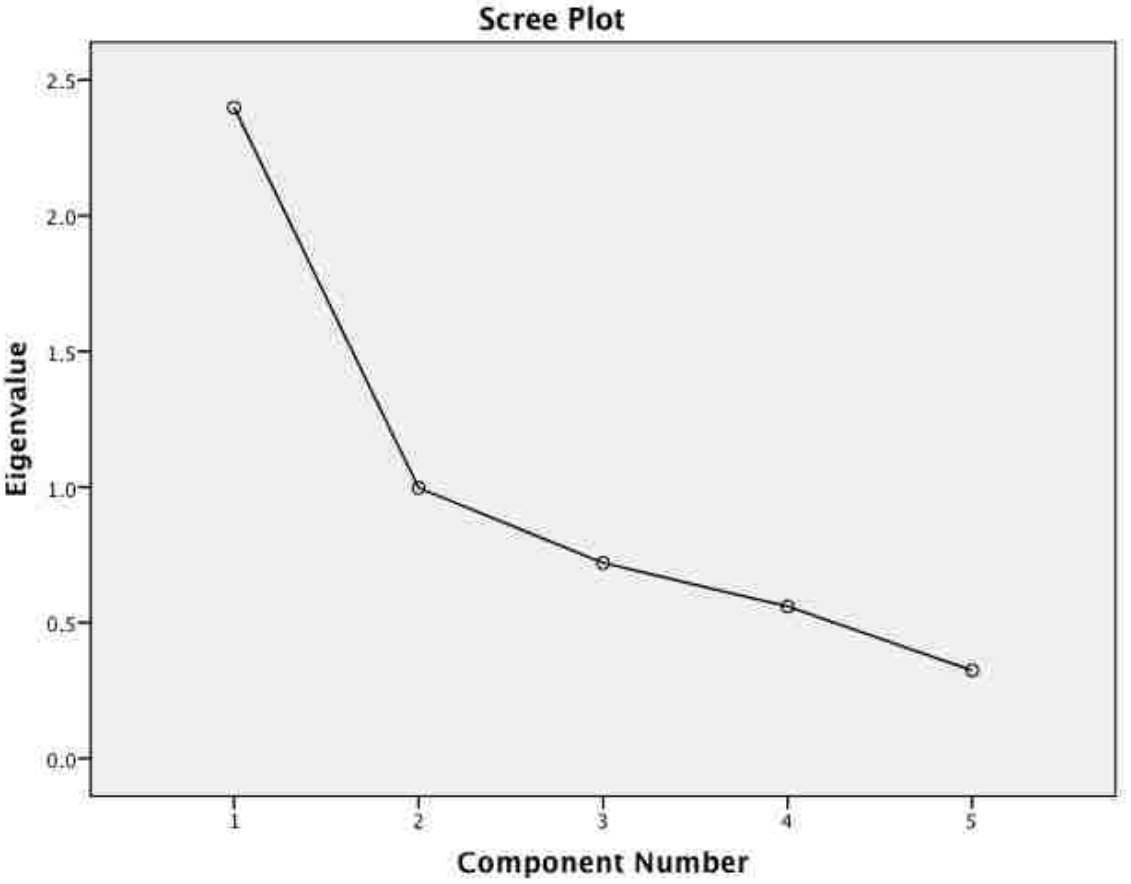


Table 11 shows a listing of the principal component matrix.

Table 11

Traditional Principal Component Matrix [a]

Focus	Component
	1
Our school pays outside consultants to present professional development activities to our teachers.	.77
Outside experts conduct our professional development activities.	.77
Teachers participate in workshops as part of the professional development program.	.70
Teachers attend conferences as part of the professional development program.	.64
Teachers take university courses as part of the professional development program	.55

Extraction method: principal component analysis.

a. One component extracted.

The Cronbach's alpha for these items provide further justification for their inclusion as a factor for further analysis (.73).

The fifth factor Murray (2010) identified was duration. The KMO measure of sampling adequacy was .83, which is considered meritorious according to Norušis (1994). As outlined in Figure 6, the initial principal component analysis found all items compose a unidimensional construct, loading on a single construct accounting for 55% of the variance.

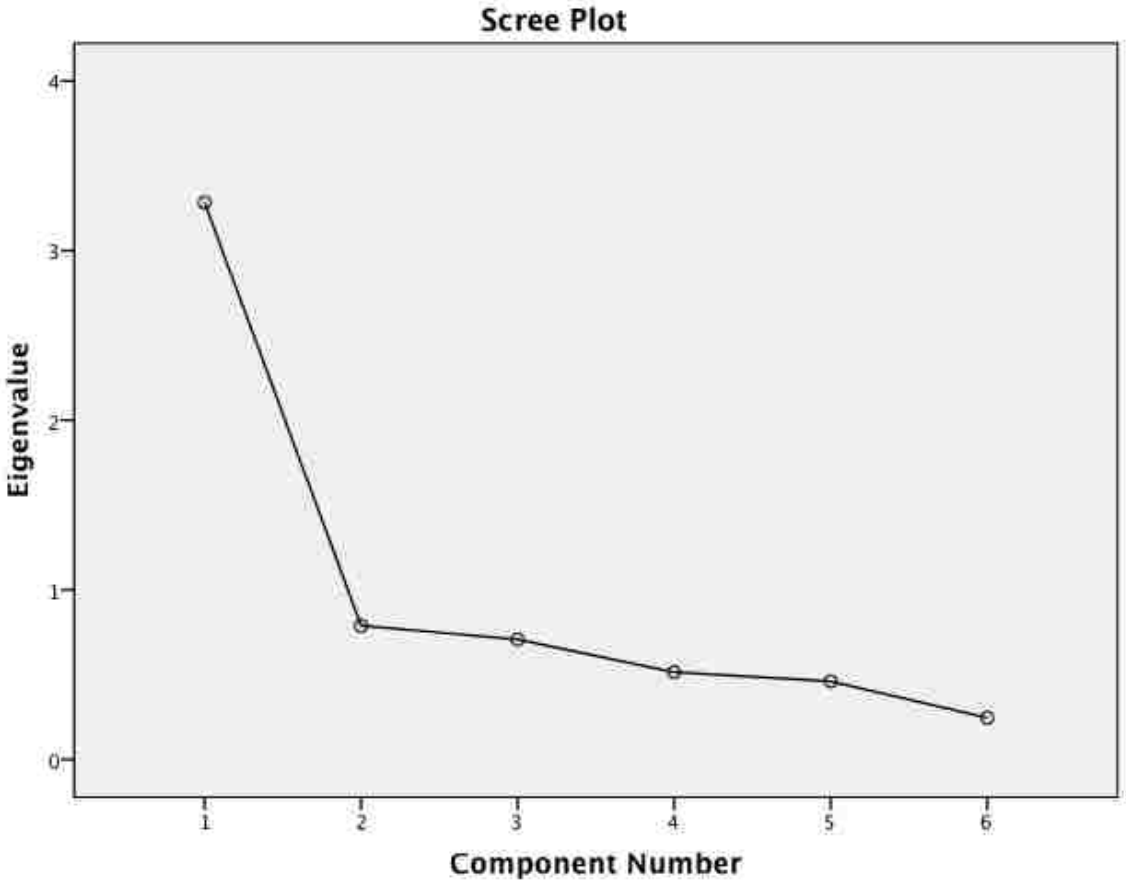


Figure 6. Duration scree plot.

Table 12 shows a listing of the principal component matrix.

Table 12

Duration Principal Component Matrix [a]

Focus	Component
	1
Professional development activities occur each week.	.84
Teachers spend more than one hour each week to engage in professional development activities.	.82
Teachers are engaged in planned professional development activities for more than 40 hours each year.	.75

Focus	Component
	1
Teacher study groups meet each week as part of our professional development activities.	.70
Time is scheduled each week for teachers to discuss what they learn from professional development activities with other teachers.	.68
Professional development activities are built into the regular workday of teachers.	.61

Extraction method: principal component analysis.

a. One component extracted.

The Cronbach's alpha for these items provide additional justification for their inclusion as a factor for further analysis (.83).

The factor analysis showed seven distinct factors from the ISPDI data. I then utilized seven factors: (ALSCDI, CPI, Content focus, Coherence, Onsite, Traditional, and Duration) to address the first three research questions for this study.

Question 1. To what extent are professional development practices in EARCOS member schools consistent with research-based principles of effective professional development?

To address this research question, I analyzed factor and individual item scores from the ISPDI using descriptive statistics, such as frequencies, means, and standard deviations. I also analyzed component scores for each of the factors identified through the factor analysis to ascertain the perceived effectiveness of professional development programs in EARCOS member schools. Table 13 shows a listing of the mean scores for the seven factors identified in the EARCOS data.

Table 13

Factor Reliabilities

Factor	No. of items	*M*	*SD*
ALSCDI	12	2.80	.67
CPI	2	3.53	.96
Content focus	6	3.15	.66
Coherence	5	3.44	.63
Onsite	2	3.64	.60
Traditional	5	3.30	.57
Duration	6	2.89	.82

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

Results showed that research-based principles of effective professional development occur within the EARCOS region. Scores for some of the identified factors (CPI, Coherence, Onsite) were all higher than the traditional component scores. Traditional component means are still relatively high in comparison with the other identified factors. Scores for duration and ALSCDI were the lowest of the seven factors, but these means would still indicate these items are sometimes occurring in EARCOS member schools.

As the component scores indicate fidelity with the core features, analysis of individual items from the ISPDI is also acceptable. Table 14 shows a listing of the descriptive statistics for each item on the ISPDI.

Table 14

Descriptive Statistics for ISPDI Items (Highest–Lowest Mean Score)

Item	All participants *M* (*SD*)	Factor
44. Teacher professional development is part of our school improvement plan.	4.00 (0.96)	Coherence
12. Teachers participate in workshops as part of the professional development program.	3.82 (0.79)	Traditional
16. Professional development activities relate directly to our institutional goals.	3.81 (0.80)	Coherence
18. Professional development activities occur onsite at our school.	3.72 (0.67)	Onsite
19. Teachers meet by grade-level to discuss instruction and student learning.	3.61 (1.13)	CPI
20. Teachers attend conferences as part of the professional development program.	3.59 (0.83)	Traditional
14. Research-based best practices inform the professional development activities in our school.	3.58 (0.88)	ALSCDI
23. Our school personnel conduct our professional development activities.	3.55 (0.72)	Onsite
29. Teachers meet by content area to discuss instruction and student learning.	3.54 (0.97)	Content
36. Professional development activities are aligned with the curriculum.	3.49 (0.89)	Coherence
26. Teachers plan instruction together.	3.45 (1.05)	CPI
21. Professional development activities focus on specific pedagogical skills.	3.40 (0.75)	Content
45. Teachers are engaged in planned professional development activities for more than 40 hours each year.	3.35 (1.22)	Duration
17. We select and design professional development activities based on analysis of our students' needs.	3.21 (0.94)	ALSCDI
10. Professional development is focused on helping teachers better understand the content of their academic discipline.	3.17 (1.11)	Content
11. Teachers participate in setting the goals of the professional development program.	3.12 (1.11)	ALSCDI
43. Our school pays outside consultants to present professional development activities to our teachers.	3.10 (0.86)	Traditional
15. Outside experts conduct our professional development activities.	3.08 (0.79)	Traditional
22. Teachers spend more than one hour each week engaged in professional development activities.	3.07 (1.11)	Duration

Item	All participants *M* (*SD*)	Factor
24. Specific teacher needs inform the selection and design of our professional development activities.	3.07 (0.79)	Coherence
13. Professional development activities are built into the regular workday of teachers.	3.06 (1.02)	Duration
40. Teachers have opportunities to apply and practice new skills during professional development activities.	3.05 (0.87)	ALSCDI
38. We select and design professional development activities related to teachers integrating technology into their specific content areas.	3.04 (0.82)	Content
28. Professional development activities occur each week.	3.03 (1.16)	Duration
30. Soon after returning from off-site professional development experiences, teachers formally share their learning with their colleagues.	2.95 (0.99)	ALSCDI
32. Professional development activities are focused on helping teachers understand how students learn best in specific content areas.	2.91 (0.94)	Content
27. Teachers take university courses as part of the professional development program.	2.90 (0.84)	Traditional
41. We design and select professional development activities to help teachers learn instructional methods for specific academic disciplines.	2.84 (0.90)	Content
47. Teachers are involved in selecting and designing the specific activities of our professional development program.	2.83 (0.89)	Coherence
34. Professional development activities include opportunities for teachers to collaboratively examine and discuss student work.	2.82 (0.92)	ALSCDI
33. Beginning teachers have formal opportunities to work with mentor teachers.	2.74 (1.19)	ALSCDI
40. Our professional development activities take place on weekdays between 8:00 a.m. and 3:00 p.m.	2.71 (1.01)	None
25. Teacher study groups meet each week as part of our professional development activities.	2.64 (1.15)	Duration
42. Teachers have opportunities to practice skills gained during professional development prior to integrating the skills into classroom instruction.	2.63 (1.00)	ALSCDI
31. Professional development activities include peer coaching.	2.51 (1.00)	ALSCDI
46. Structured support is provided for teachers implementing new skills until they become a natural part of their classroom instruction.	2.33 (0.99)	ALSCDI
48. Formal training on how to effectively collaborate with each other is provided for teachers.	2.33 (0.97)	ALSCDI
35. Professional development activities include opportunities for	2.28 (0.95)	ALSCDI

Item	All participants *M* (*SD*)	Factor
teachers to observe and critique each other.		
37. Time is scheduled each week for teachers to discuss what they learn from professional development activities with other teachers.	2.18 (1.01)	Duration

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

Analysis of the individual items in the ISPDI indicates items with high means across all factors. Four of the six traditional items have means on the top half of all items, indicating EARCOS teachers still have significant access to traditional professional development activities. Specifically, EARCOS teachers had very high scores for the presence of workshops ($M = 3.82$) and conferences ($M = 3.59$). Alternatively, seven of the other items which had means above 3.50 corresponded with effective professional development practices outlined in the research. Items relating to coherence, onsite, and collaboration while planning instruction were exceptionally prominent with consistently high individual item mean scores.

Fifteen items had mean scores less than 3. Of those items, only four had mean scores less than 2.5, which indicates these activities seldom occur within EARCOS member schools. Individual items relating to ALSCDI were exceptionally prominent amongst the lowest mean scores with 5 of the lowest six means. Upon analysis of the lowest ten means, only items relating to ALSCDI and duration were within this range.

In summary, some features of effective professional development are present within EARCOS member schools. In addition, activities corresponding with traditional professional development still regularly occur. Although features occur frequently with

EARCOS member schools, activities relating to ALSCDI and duration appear to be the least prominent.

Question 2: To what extent do differences exist in professional development practices and the following organizational level variables? For this question, the examined organizational level variables included school division, proprietary status of school, and curriculum framework.

School Division

Inferential tests indicate homogeneity of dispersion and well-correlated outcome variables. I conducted a Box's Test of Equality of Covariance Matrices and a Bartlett's Test of Sphericity to test these assumptions. The *p* value for the Box's M test was .09, which is greater than .05, meaning the *p* value is nonsignificant and shows the dispersion of the outcome variables are not significantly different. The *p* value for the Bartlett's tests was .0005, which is less than .05, meaning the test is significant with well-correlated outcome variables.

Based on these results, I proceeded with a multivariate analysis. The result of the omnibus MANOVA test, considering all seven components at once, was significant with Pillai's trace = .108 ($p < .0005$): a significant result. To test the assumption that each individual outcome variable meets the homogeneity of variance assumption, I conducted a Levene's Test of Equality of Error Variances. Almost all of the outcome variables were nonsignificant ($p > .05$). The only exception was CPI ($p < .004$), which was therefore excluded from the subsequent MANOVA test. Table 15 shows the results of Levene's Test of Equality of Error Variances.

Table 15

Levene's Test of Equality of Error Variances

Factor	*p*
ALSCDI	.937
CPI	.004
Content focus	.074
Coherence	.192
Onsite	.523
Traditional	.634
Duration	.205

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

A MANOVA test of the effects for school division was conducted. Partial eta squared shows the effect size for each variable. The rule of thumb for interpreting effect size is small (.01), medium (.06), and large (.13). Based on these thresholds, School Division is a significant predictor of all outcome variables, with the exception of Onsite, as indicated by each probability (*p*) value less than .05. Table 16 shows the results of the MANOVA test of the effects for School Division.

Table 16

Tests of Between-Subjects Effects

Outcome variable	Source	*df*	*F*	*p*	Partial eta squared
ALSCDI	Division	1	7.77	.005	.01
Content focus		1	20.31	.000	.03
Coherence		1	5.64	.018	.01
Onsite		1	.71	.400	.00
Traditional		1	6.07	.014	.01
Duration		1	14.39	.0005	.02

Note. ALSCDI = active learning, support, and collaboration during instruction.

Since CPI did not meet the homogeneity of variance assumption, I conducted a *t* test. The results show the means for elementary and secondary divisions are significantly different for CPI ($t[405.28] = 8.09$, $p < .0005$). In addition, the partial eta squared for this effect was .09. Based on these results, I determined that School Division has a medium to large effect with regard to CPI.

School Division is a significant predictor for all outcome variables with the exception of Onsite. In this case, School Division has a small effect with regard to ALSCDI, Content Focus, Coherence, Traditional, and Duration, as well as a medium to large effect with regard to CPI. Table 17 shows in every case, the significant effect is due to the professional development activity component scores, higher for elementary level teachers than for secondary level teachers.

Table 17

Professional Development Activity Component Scores, by School Division

Outcome variable	School division (*M*)	
	Elementary	Secondary
ALSCDI	2.91	2.74
CPI	3.96	3.33
Content focus	3.32	3.06
Coherence	3.52	3.39
Traditional	3.38	3.26
Duration	3.07	2.79

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

Proprietary Status of School

Inferential tests indicate homogeneity of dispersion and well-correlated outcome variables. These assumptions were not met when tested, so I decided to follow up with univariate tests of mean differences. Since multiple tests were required, I used the

Bonferroni's correction for the alpha level (alpha [.05]/number of tests [7] = 0.007). Based on this analysis, the means for CPI, Traditional, and Duration differed as a function of proprietary status. Table 18 shows the *t* statistics and mean differences for each of the components.

Table 18

Independent Samples Test (t Statistics and Mean Differences)

Variable	*t*	*df*	*p*	Mean difference
ALSCDI	-1.13	129.51	.261	-.10
CPI	-3.86	577.00	.0005	-.40
Content focus	-.59	131.94	.558	-.05
Coherence	-2.20	133.42	.030	-.17
Onsite	-1.40	126.00	.164	-.11
Traditional	-3.48	126.80	.001	-.26
Duration	-3.48	577.00	.001	-.31

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

For the three variables that showed significant differences, the means of nonprofit schools was higher than the means of for-profit schools. In all cases, the effect sizes were small. Table 19 shows the descriptive statistics for components that differ by proprietary status.

Table 19

Descriptive Statistics for Components, by Proprietary Status

Variable	Proprietary status of school							
	Profit				Nonprofit			
	n	*M*	*SD*	Eta squared	*n*	*M*	*SD*	Eta squared
CPI	103	3.21	.98	-	476	3.61	.94	.025
Traditional	103	3.09	.71	-	476	3.35	.52	.03
Duration	103	2.64	.92	-	476	2.95	.79	.021

Note. CPI = collaboration while planning instruction.

Curriculum Framework

The assumption of well-correlated variables for the items related to years of experience was met as shown in Bartlett's Test of Sphericity ($p < 0.0005$). I then conducted a multivariate test by regressing the seven professional development practices component scores on the predictor variable, curriculum framework. The multivariate effect was not significant as shown by a Pillai's Trace of .022 ($p < .010$). I did not conduct further testing for this predictor variable. Based on the results of this analysis, IB teachers and non-IB teachers perceive PDP to be at equivalent levels.

In summary, two of the organizational level variables were correlated with educators' perceptions of their professional development practices. More specifically, school division is a significant predictor for all outcome variables with the exception of Onsite. Elementary teachers have higher perceptions of their professional development opportunities than secondary teachers with a small effect with regard to ALSCDI, Content Focus, Coherence, Traditional, and Duration, as well as a medium to large effect with regard to CPI. Although the effect sizes were small, nonprofit schools had higher means than proprietary schools for the following three components of the ISPDI: CPI, Traditional and Duration.

Question 3: To what extent do differences exist in professional development practices and the following individual teacher variables? For this question, I examined the following individual teacher variables: years of experience, contract status, and teaching role within the school.

Years of Experience

The assumption of well-correlated variables for the items related to years of experience was met as shown in Bartlett's Test of Sphericity ($p < 0.0005$). I then conducted a multivariate test by regressing the seven professional development practices component scores on years of experience. The multivariate effect was significant as shown in Pillai's trace of .033 ($p < .008$). I also examined the univariate effects of years of experience on professional development practices. Table 20 shows a listing of the univariate effects of years of experience on professional development practices scores.

Table 20

Outcome variable	Source	*df*	*F*	*p*	Partial eta squared
ALSCDI	Years of experience	1	5.313	.022	.009
CPI		1	8.042	.005	.014
Content focus		1	6.740	.010	.012
Coherence		1	6.789	.009	.012
Onsite		1	2.941	.087	.005
Traditional		1	16.593	.000	.028
Duration		1	6.805	.009	.012

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

All of the PDP scores were significantly linked to years of experience, with the exception of Onsite. In all significant cases, the effect sizes were positive but small. Specifically, as the years of experience increased, perceptions of effective professional development increased. Table 21 shows the regression statistics for the link between years of experience and the PDP scores.

Table 21

Regression Statistics for the Link Between Years of Experience and the PDP Scores

Outcome variable	Predictor	*B*	*p*	Partial eta squared
ALSCDI	Years of experience	.007	.022	.009
CPI		.013	.005	.014
Content focus		.008	.010	.012
Coherence		.008	.009	.012
Traditional		.011	.0005	.028
Duration		.010	.009	.012

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

Status of Contract

Inferential tests indicate homogeneity of dispersion and well-correlated outcome variables. These assumptions were not met when tested, so I decided to follow up with univariate tests of mean differences. Since multiple tests were part of the requirement, I used Bonferroni's correction for the alpha level (alpha [.05]/number of tests [7] = 0.007). Based on this analysis, the mean for ALSCDI differed as a function of contract status. Table 22 shows the *t* statistics and mean differences for each of the factors. In this case, the local hire mean was higher than the overseas hire mean although the effect size was small (eta squared = .023).

Table 22

Independent Samples Test (t Statistics and Mean Differences)

Outcome variable	*t*	*df*	Sig. (2-tailed)	Mean difference
ALSCDI	-3.00	105.77	.003	-.28
CPI	.48	580.00	.633	.05
Content focus	-2.26	108.04	.026	-.20
Coherence	-.41	580.00	.684	-.03
Onsite	1.45	103.26	.150	.13
Traditional	-.28	109.45	.783	-.02
Duration	-1.27	109.20	.208	-.14

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

Teaching Role

Inferential tests indicate homogeneity of dispersion and well-correlated outcome variables. These assumptions were unmet when tested, so I decided to follow up with univariate tests of mean differences. Since multiple tests were required, I used Bonferroni's correction for the alpha level (alpha [.05]/number of tests [7] = 0.007). Based on this analysis, the means for ALSCDI, CPI, Content focus, Coherence, and Duration differed as a function of teaching role. Table 23 shows the *t* statistics and mean differences for each of the factors.

Table 23

t Statistics and Mean Differences for Each Factor

Outcome variable	*t*	*df*	*p*	Mean difference
ALSCDI	-3.50	576	.001	-.20
CPI	-2.96	576	.003	-.24
Content focus	-3.07	576	.002	-.17
Coherence	-2.81	576	.005	-.15
Onsite	-1.22	576	.223	-.06
Traditional	-2.35	576	.019	-.11
Duration	-3.39	576	.001	-.24

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

In all significant cases, the means of Elective, Specialist, or Support teachers was higher than the means of core area teachers. In all cases, the effect sizes were small. Table 24 shows the descriptive statistics for components that differ by teaching role.

Table 24

Descriptive Statistics for Components, by Teaching Role

Outcome variable	Role					
	Content area teacher			Elective, specialist, or support educator		
	M	*SD*	Eta squared	*M*	*SD*	Eta squared
ALSCDI	2.72	.65	.02	2.92	.69	-
CPI	3.43	.98	.01	3.67	.90	-
Content focus	3.08	.66	.02	3.26	.65	-
Coherence	3.38	.63	.01	3.53	.63	-
Duration	2.79	.84	.02	3.03	.78	-

Note. ALSCDI = active learning, support, and collaboration during instruction; CPI = collaboration while planning instruction.

In summary, individual level variables are linked to educators' perceptions of their professional development practices. Years of experience are a predictor for all outcome variables, with the exception of Onsite. As teachers gain experience, their

perceptions of alignment with effective professional development practice increases. Local hires within EARCOS member schools had higher perceptions for ALSCDI than overseas hires. In addition, specialist area teachers had higher perceptions than core area teachers for five of the factors identified in the analysis (ALSCDI, CPI, Content focus, Coherence, and Duration).

Question 4: What are the most prevalent professional development experiences in EARCOS member schools?

Teachers were asked to say whether they had experienced nine different professional development experiences. The activities and the percent who said yes, they had experienced the activity, are presented on Table 25. The most prevalent experiences for educators in EARCOS schools were courses and workshops (95.5%); engaging in informal dialogue with colleagues (92%); and reading professional literature (79%). Based on the data, the least prevalent experiences for educators in EARCOS schools were observation visits to other schools (26.7%), qualification programs (34.4%), as well as mentoring and peer coaching within the school (42.6%). Table 25 shows a listing of the professional development experiences, from most prevalent to least prevalent.

Table 25

Professional Development Experiences (Most Prevalent–Least Prevalent)

Professional development experience	*% Who Experienced Each Activity*
Courses and workshops (e.g., on subject matter or methods and other education-related topics)	95.5
Engaging in informal dialogue with your colleagues on how to improve your teaching	92.0
Reading professional literature (e.g., journals, evidence-based papers, thesis papers)	79.0
Education conferences or seminars (where teachers and researchers present their research results and discuss	67.0

Professional development experience	*% Who Experienced Each Activity*
educational problems)	
Individual or collaborative research on a topic of interest to you professionally	55.5
Participation in a network of teachers formed specifically for the professional development of teachers	53.0
Mentoring, peer observation, or coaching as part of a formal school arrangement	42.6
Qualification program (e.g., a degree program)	34.4
Observation visits to other schools	26.7

Question 5a: According to educators employed in EARCOS member schools, which professional development experiences are most effective for their development as educators?

Educators were asked to assess the impact of each professional development activity they had experienced. Responses were as follows: 1 = no impact, 2 = a small impact, 3 = a moderate impact, and 4 = a large impact. Educators within the EARCOS region highlighted informal dialogue with colleagues (mean = 3.36); courses and workshops (mean = 3.11); and individual or collaborative research (mean = 2.95) as the most effective experiences for their development. Table 26 shows a listing of the professional development experiences organized from the most effective to the least effective.

Table 26

Descriptive Statistics for Professional Development Experiences (Most Effective–Least Effective)

Professional development experiences	*M*	*SD*	Valid *n*
Engaging in informal dialogue with your colleagues on how to improve your teaching	3.36	0.75	508
Courses and workshops (e.g., on subject matter or methods and other education-related topics)	3.11	0.75	529

Professional development experiences	*M*	*SD*	Valid *n*
Individual or collaborative research on a topic of interest to you professionally	2.95	1	332
Education conferences or seminars (where teachers and researchers present their research results and discuss educational problems)	2.87	0.84	388
Qualification program (e.g., a degree program)	2.8	1.22	248
Reading professional literature (e.g., journals, evidence-based papers, thesis papers)	2.73	0.83	447
Participation in a network of teachers formed specifically for the professional development of teachers	2.71	0.97	320
Mentoring, peer observation, or coaching as part of a formal school arrangement	2.5	1.06	277
Observation visits to other schools	2.49	1.17	210

Question 5b: According to educators employed in EARCOS member schools, which professional development experiences are least effective for their development as educators?

Educators within the EARCOS region highlighted observation visits to other schools ($m = 2.49$), mentoring, peer observation, coaching ($m = 2.50$), and participation in a network of teachers ($m = 2.71$) as the least effective experiences for their development.

Summary

In summary, a factor analysis identified seven components emerging from the ISPDI: ALSCDI, CPI, Content focus, Coherence, Onsite, Traditional, and Duration. Based on analysis of these factors, EARCOS educators perceive their professional development experiences are aligned with the core features of effective professional development. The identified factors were then utilized to analyze how organizational level (school division, proprietary status of school, and curriculum framework) and individual level variables (years of experience, contract status, and teaching role within

the school) were correlated with teachers' perceptions of the effectiveness of professional development opportunities in EARCOS member schools. When looking at organizational level variables, educators working in elementary school divisions had higher perceptions of ALSCDI, CPI Content focus, Coherence, Traditional, and Duration than secondary teachers. In addition, educators working in nonprofit schools had higher means than educators working in proprietary schools for CPI, Traditional and Duration. No significant effect was found when analyzing the curriculum framework within EARCOS member schools. When analyzing individual level variables, teachers with more years of teaching experience perceived their professional development experiences to be more effective than all components except for Onsite. Locally hired teachers had higher perceptions of ALSCDI than overseas hired teachers. Finally, specialist teachers had higher mean scores for ALSCDI, CPI, Content focus, Coherence, and Duration than teachers working as core area teachers in EARCOS member schools.

Also analyzed were the prevalence of professional experiences. The most common experiences for educators in EARCOS member schools were courses and workshops; informal dialogue with colleagues; and reading professional literature. Educators in EARCOS member schools identified the most effective professional development to be informal dialogue with colleagues, individual or collaborative research, and educational conferences. Alternatively, educators in EARCOS member schools identified the least effective professional development to observation visits to other schools, mentoring, peer observation, or coaching, and participation in a network of teachers.

CHAPTER 5

Discussions and Implications

The current educational landscape is extremely fluid, and the demands and responsibilities of educators are changing on a yearly basis. In the modern era of educational accountability, the professional development of teachers is often a central component of educational reform agendas around the world (Borko & Putnam, 1995; Darling-Hammond, 1993; Desimone, 2009; Talbert & McHaughlin, 1993; Thompson & Zeuli, 1999). Despite recognition of its importance, many teacher professional development programs have been inadequate (Borko, 2004). Even though schools, districts, and governments spend millions of dollars on methods to improve the performance of teachers, these programs are often fragmented, intellectually superficial, and unsuccessful in consideration of the learning processes of the adults utilizing them (Borko, 2004; Cohen & Ball, 1999). Therefore, the purpose of this study was to assess the effectiveness of professional development programs in EARCOS. Based on the quantitative analyses Murray (2010) conducted on data from U.S. independent school heads, this study included similar analytical techniques to the sample of teachers in EARCOS member schools. A quantitative analysis of the data gathered was consistent with many of the efforts to help EARCOS teachers to improve their practice. In addition, the data can be helpful in providing the EARCOS region with information to further improve its professional development opportunities, consistent with the available research.

Findings

This was the first study with some significant findings on investigating professional development within the EARCOS region. Although schools within its region operate independently of one another, EARCOS is one of seven similar organizations providing professional development support to international schools around the world. Prior research has indicated teachers have not had consistent access to the core features of effective professional development (Darling Hammond et al., 2009; Murray, 2010). The data gathered from the ISPDI highlighted EARCOS teachers perceiving their professional development experiences are consistent with some of the core features of professional development identified in the available literature. When compared with similar studies conducted in other settings, the EARCOS region has apparently provided teachers with high-quality professional development experiences. Since the available research is limited with regard to positive examples of effective professional development practice, the results from this study indicate the EARCOS region may be an excellent population to identify how to develop and implement effective professional development programs.

To measure the effectiveness of professional development, a consistent and improved instrument must be accessible to researchers and school organizations. The current research has shown the lack of a consistent measure of effective professional development within schools (Desimone, 2009) and has included the use of the ISPDI, derived from a parent instrument known as ISTDI (Murray, 2010). The factor analysis conducted for this study was further validation of this instrument as a tool to measure the core features of effective professional development researchers identified (Desimone,

2002). Furthermore, the factor analysis indicated two additional factors, which were not found during the previous use of ISTDI. This study has been helpful to extending the use of the items within the ISTDI; more researchers will be able to continue to refine and identify a common measure for the core features of effective professional development.

Also highlighted in this study are certain organizational variables that may have an effect on teacher perception, with regard to their professional development. As identified in prior research, elementary teachers specified their professional development experiences are more effective than those provided to secondary teachers (Blank & de las Alas, 2009; Darling-Hammond et al., 2009; Murray, 2010). Moreover, teachers working in nonprofit schools felt their professional development experiences were more consistent with the three core features (CPI, traditional, duration) than those of teachers working in proprietary schools.

Individual level variables also had an effect on teachers' perceptions of their professional development experiences. As teachers' years of experience increase, their perception of alignment with effective professional development practices also increases. The teachers' role within the school also has an impact on their perceptions. Teachers working as elective, specialist or support teachers perceived stronger alignment with the features of effective professional development than those of teachers working as core area teachers.

This chapter includes a discussion of study findings, suggestions for applying these findings to practice, and recommendations for further research in professional development practice.

Discussion of Findings

The means of the identified factors indicate educators within the EARCOS region perceive their professional development experiences to be aligned with the core features of professional development. Of the seven identified factors from the ISPDI, the lowest means were 2.80 (ALSCDI) and 2.89 (Duration). Although these means were the lowest, it would indicate these activities sometimes occur within EARCOS member schools. The means of the other identified components all exceeded 3.15, with the highest mean for onsite activities (3.64), indicating these activities frequently occur. Due to the relative isolation of international schools, the high mean for onsite is logical since onsite refers to activities occurring at school, under the supervision of the school personnel. Schools within the EARCOS region are individual entities in over 40 countries. This isolation can often limit access to other schools or professional development experiences that each school must provide on their own to ensure their faculty members are continuing to improve their practice.

The relative isolation of international schools may have contributed to the high mean score for another factor. CPI was another factor that had a high mean (3.53), indicating these activities frequently occur within EARCOS member schools. These items relate to the planning of instruction and the process of meeting as a team to discuss student learning. Without access to a central organization or district level office, international schools have had to develop structures that will be helpful to facilitating curriculum work within their institutions. To ensure the completion of this work, many schools provide teachers with more preparation time than would be customary in North American schools. In addition, most international schools have teaming structures in

place to guarantee this work is done collaboratively. Teachers are customarily provided with common preparation time and the expectation that units and assessments are consistent within international schools. As researchers have found, the collective work of teacher teams has been a consistent feature of effective professional development (Darling-Hammond & McLaughlin, 1995; Desimone, 2009). These structures may have been helpful in contributing to the high scores for CPI in this study.

The use of some items within the ISPDI were for identifying the access teachers have to traditional professional development activities. The research has shown, however, that some of these activities (workshops, conferences, university courses) have little impact on improving teacher practice (Blank et al., 2008; Cohen & Ball, 1999; Darling-Hammond et al., 2009; Garet et al., 2001; Supovitz & Turner, 2000). With limited research to support these activities, researchers have begun to identify alternative features of professional development to improve teacher practice and student learning. Teachers still have significant access to activities defined as traditional in nature (M = 3.30) within the EARCOS region. As an organization, EARCOS annually sponsors a number of professional development conferences, whose attendees include thousands of educators from within the region. This high mean may be reflective of the opportunities many EARCOS teachers have to take part in these experiences each year. Although many researchers have denounced these experiences as one-shot opportunities, others have highlighted that traditional experiences can be effective if they are part of a sustained, coherent program of professional development (Birman et al., 2000). Since the EARCOS organization is governed by a Board comprised of school heads within the

region, these conferences are possibly a part of a more sustained learning experience contributed to the high means amongst other factors identified within the ISPDI.

As data analysis showed, the teachers within the EARCOS region apparently had higher perceptions regarding the effectiveness of their professional development practices than those of a previous population (Murray, 2010). The ISPDI and ISTDI contained 39 common items for measuring types of professional development experiences: 34 items for measuring reform types (e.g., mentoring or coaching) and 5 items for measuring traditional types (e.g., workshops, conferences). EARCOS respondents mean scores were higher than U.S. independent school respondents on 28 of the 34 common reform items. In addition, EARCOS respondents mean scores were lower than U.S. independent school respondents on all five of the common traditional items. The traditional mean from the EARCOS educators (3.30) was significantly lower than the mean from the independent school heads (4.50). As traditional items were created to measure professional development activities that have not effectively improved teacher practice, the lower mean within the EARCOS region would be viewed positively upon analysis. In addition to the traditional component, the mean scores for the EARCOS sample (2.89) within the duration component were significantly higher than the U.S. independent school sample (1.42). Based on these scores, one could ascertain professional development opportunities for EARCOS educators are less traditional in nature, and of greater duration. When comparing common factors between the two populations, the EARCOS population had higher mean scores for all reform factors, with the exception of Content focus. The mean scores within the EARCOS population for the traditional factor were also lower than those identified within the U.S. independent school population.

Based on this data, EARCOS teachers perceive their professional development opportunities to be much more consistent with the core features of effective professional development identified from the available research. This development is significant since prior studies conducted across populations of educators have indicated little coherence between professional development practices and research-based best practice (Darling-Hammond et al., 2009; Murray, 2010). Although the respondents in Murray's study (2010) were administrators, comparisons between the two studies are beneficial. In fact, previous researchers have found administrators have often rated the same professional development experiences higher than the involved teachers (Bingham & White, 1993; Desimone, 2006).

This study was the second study to include the items developed for the ISTDI (Murray, 2010). Although Murray identified five factors from the data within his population, analysis of these items when administered within the ISPDI showed seven factors. Three of the factors Murray found were also evident after completing a confirmatory factor analysis (Content focus, Traditional, and Duration). As Murray had found, items relating to Active learning and Collective participation loaded onto one factor identified as ALSCDI. In contrast to Murray's analysis, three items did not load on this factor. Two of these items loaded onto a separate factor known as CPI, which included activities specifically related to the planning of instruction and the process of meeting as a team to discuss student learning. The third item was discarded, as it did not load on either ALSCDI or CPI. Murray's analysis had also found seven items within the ISTDI loaded onto one factor known as Coherence. The factor analysis for this study found five items loaded onto a Coherence factor. The two remaining items loaded onto a

new factor called Onsite, which refer to activities occurring at school and those conducted by school personnel. The development of a common tool to measure the core features of effective professional development is a central theme within the available research. With this analysis, future researchers have gained important data to continue refining the ISTDI to measure the core features of effective professional development.

Organizational conditions within schools also had effects on teachers' perceptions of the effectiveness of their professional development experiences. Teachers working in the elementary division had higher perceptions of their professional development experiences for all components, with the exception of Onsite. These findings are consistent with earlier research, which has consistently indicated that elementary educators have better access to effective professional development experiences (Blank & de las Alas, 2009; Darling-Hammond et al., 2009; Murray, 2010). A core feature of effective professional development relates to the collaborative nature of learning; thus, elementary schools view their experiences as more effective. Elementary schools, often organized as teams, work collaboratively on their unit design with common planning time to complete the work. These structures are rare within the secondary setting, where teachers often work individually, and because of their schedules, they find it difficult to collaborate during the day.

Proprietary status was also an organizational condition, which has an effect on teachers' perceptions. Although the effect sizes were small, teachers working in nonprofit schools had higher means on three factors; CPI, traditional and duration. This fact is alarming for proprietary schools and may be related to the need for adequate resources for professional learning. Effective professional development programs

involve a significant investment of time and resources. Although the mission of proprietary schools is to educate their students, they also have an expectation to earn a profit each year for their owners or stakeholders. The competing demands for resources within proprietary institutions may lead to fewer resources devoted to the professional development of their faculty members.

The final organizational condition, curriculum framework, subjected to analysis proved not to be an indicator of teachers' perception. As schools within the EARCOS region follow varied curriculum models, knowing how this may affect the opportunities for teachers to develop as professionals is important. A common program found in EARCOS schools is the International Baccalaureate (IB). Teachers working within this curriculum framework, as expected, take part in specific professional development programs of the IBO. Since components of professional development indicated no significance, adherence to the IB curriculum framework and participation in IBO professional development seem to have no effect on teachers' perception of their professional development experiences.

Individual teacher variables also had some effect on the perceptions of EARCOS teachers with regard to professional development experiences. Educators with more experience conveyed higher perceptions of effectiveness for all professional development components. This development is significant since teachers with less experience may appear to have more willingness to take advantage of learning opportunities to improve their performance within the classroom. Even if that is the case, apparently, teachers with less experience perceive their professional development experiences are not as effective as those of more experienced educators. This result was extremely surprising,

as beginning teachers related directly to some of the items on effective professional development (e.g., mentoring, peer coaching). One possible explanation for this would be the normal progression of international school teachers. Many international school teachers move from school to school, looking to improve their experiences and quality of life. As teachers progress through their careers and gain valuable experience, they may be more likely to be hired at top-tier international schools, which provide the best benefits packages, including generous access to professional development. This finding may then be a result of more experienced teachers working at schools, which have more resources. Regardless, this is a very interesting finding and one that requires more research in alternate settings.

In most international school contexts, the basis of teachers' different contracts may be their point of origin. Teachers hired from outside the school's country are overseas hires, and teachers hired from within the country are local hires. Since these contracts have varied benefits packages, including access to professional development opportunities, knowing if these varied contracts affect the perceptions of effective professional development practice is important. Analysis indicated the minimal effect, as locally hired teachers had higher perceptions of only one factor: ALSCDI. This result was also surprising, as overseas-hired educators have traditionally had more access to benefits, including professional development funds, within many international school contexts. That being said, the high results found from the ISPDI for onsite, coherence, and CPI may be helpful in guaranteeing access to valuable professional learning activities at individual school settings, regardless of additional professional development benefits.

Educators within schools work in a variety of disciplines, and to understand how teaching role may affect professional development opportunities is important. Within the EARCOS population, the elective, specialist or support teachers perceived their professional development experiences as more effective than core area educators. This was evident for all components with the exception of Onsite and Traditional. These findings are significant for schools, as professional development programs can be useful to improve the performance of all educators. This result was extremely surprising as the design of professional development activities often includes the core disciplines (math, humanities, science). In addition, many external conferences also focus on the core disciplines, with few learning experiences designed for physical education, performing arts, or student support services. Although this may be the norm in alternate settings, EARCOS has restructured their professional development conferences to provide all disciplines with consistent access to learning experiences. The teacher conferences within the EARCOS region are organized on a three year cycle with the focus of each conference being different each year. This format ensures that all teachers, regardless of role, will have consistent access to a conference organized by their discipline. As this is the first study which has identified alternative perceptions of professional development for elective, specialist or support teachers, it is vital that additional research is conducted to ascertain whether these results are replicated in alternate settings.

When asked, educators within the EARCOS region also identified the most and least prevalent professional development experiences in their schools. Although educators in EARCOS reported higher alignment with effective development practices than those of previous populations, these results indicate most prevalent teacher

experiences correspond with traditional activities. Over 95% of EARCOS educators had participated in courses and workshops, which, if attended in isolation, have shown minimal impact on teaching practice or student learning (Cohen & Ball, 1999; Garet et al., 2001). In addition, among the least prevalent experiences considered as reform activities is peer coaching within the school (42.6%). In comparison with the TALIS results (OECD, 2009), the data compiled from EARCOS teachers indicated surprising results. EARCOS teachers were much more likely to have participated in workshops (95.5% vs. 81%), educational conferences (67% vs. 48%), individual or collaborative research (55.5% vs. 35%), and networks of teachers (53% vs. 40%). Of the nine items common amongst the two surveys, the only item where EARCOS teachers indicated less frequency than teachers responding to the TALIS was observation visits to other schools (26.7% vs. 28%). Although the populations for both studies are different, seeing the high EARCOS educators' participation rates in professional development experiences is enlightening, when compared with another study. Obviously teachers within EARCOS have access to a variety of learning experiences and they receive encouragement to take advantage of these experiences to improve their practice.

When asked to assess the effectiveness of professional development experiences, teachers reported informal dialogue with colleagues as the most effective activity. This report is enlightening and is supportive of the opportunities for EARCOS teachers to collaborate with colleagues. Unfortunately, other reform activities, such as mentoring, peer coaching, and participation in a professional network of teachers for professional development, were some of those the EARCOS educators cited as the least effective activities for professional development. These findings are significant because educators

are likely to choose professional development activities based on whether or not they feel they will effectively help them to improve their practice. Apparently teachers may still fail to see the link their collaborative daily practice potentially has for their own professional learning. Teachers still feel compelled to seek the advice of experts in formal learning experiences (e.g., educational conference) rather than the collaborative processes of unit planning, peer observations, or coaching. Since schools seldom promote these practices or refuse to provide teachers with the time to do so, to understand teachers fail to see them as ineffective for their own professional learning is not surprising. As the research has identified reform activities as being more successful, the educators' ability to identify effective activities is critical to help them improve their teaching practice.

Based on data, teachers in the EARCOS region obviously have a strong desire to improve their practice. In addition to the high rates of participation in professional development activities, teachers also demonstrated a willingness to participate most in activities they felt were most effective. Teachers identified informal dialogue with colleagues ($M = 3.36$) as well as courses and workshops ($M = 3.11$) as the most effective types of professional development activity. They also identified these activities as the most prevalent: informal dialogue with colleagues (92%) as well as courses and workshops (95.5%). Alternatively, the activities defined as least effective were observation visits to other schools ($M = 2.49$) and mentoring or peer coaching ($M = 2.5$). These two activities were two of the least prevalent activities within EARCOS member schools: observation visits to other schools (26.7%) and mentoring or peer coaching (42.6%). This result is a contrast of the results from the TALIS survey, which had very

low participation rates for the activities deemed most effective: individual and collaborative research, qualification programs (OECD, 2009).

Recommendations for Practice

The results of this study have implications for many schools, professional development organizations, school leaders, and individual educators. Schools need to be aware of the core features of professional development to ensure educators have the opportunity to improve their practice and student learning.

Schools need to be aware that certain organizational conditions can affect professional development opportunities for educators. As teachers working in elementary schools have consistently reported more effective experiences, schools can begin to analyze these conditions to improve the effectiveness for secondary teachers. For example, elementary school teachers are often organized on grade level teams, which have frequent collaboration and informal dialogue about teaching practice and student learning. In comparison, these teaming structures are less frequently employed with high school settings. Schools valuing the core features of professional development should consider establishing structures, which support these features in all divisions within the school.

Over the past decade the number of proprietary schools operating around the world has expanded significantly. Although the core business of proprietary schools may be consistent with nonprofit institutions, they must ensure resources are devoted to the development of their educators. In every school resources are finite and dependent upon prioritization of investment. Creating structures supporting the core features of professional development are a significant investment and must be a priority to help all

teachers improve their practice and the learning of their students. As professional development has the potential to improve the learning experience for all students, ensuring proper resources are allocated to these programs for their faculties is imperative in proprietary schools.

Schools must also recognize professional development as a unique experience and support all teachers to improve their practice. Teachers often work in schools for decades, and opportunities for educators must be differentiated based on the prior experiences of each teacher. This scenario is especially evident in international schools where teacher turnover can be high and prior professional development experiences can be so vastly different. Apparently, the teachers' levels of experience or roles within the school have an impact on their professional development experiences. Schools can work to improve these experiences by providing more focused opportunities to core area teachers and by working to differentiate the activities based on the prior experiences of each teacher.

The knowledgeability of teachers in the research surrounding effective professional development is also important. As teachers have many opportunities each day to identify their experiences to improve their practice, their understanding on which experiences will help them improve the most is essential. This study has shown a discrepancy between research findings and teachers' perception on effective professional development. As expected, many of these traditional experiences continue to have high numbers of participating teachers. This situation is especially evident when looking at experiences teachers feel are the least effective (visits to other schools, mentoring, peer coaching, participation in a network of teachers). Schools and professional development

organizations can be helpful in emphasizing the most effective types of professional development experiences so teachers can begin to self-select these experiences on a more regular basis.

Finally, the purpose of professional development needs to be transparent to all educators working in school settings. The purpose of professional development is to increase the achievement of students, and schools can further the work to align professional development practices with these measures. In addition, efficacy for development can improve if teachers are able to see the connection between these experiences and the improvements in student objectives. Although this may be a daunting task, this work is essential to ensuring all teachers have the opportunity to develop their practice effectively.

Recommendations for Future Research

The results of this research study include many insights into the professional development practices within EARCOS member schools. In addition, the results of this study have indicated the need for further research in this area. Following are recommendations for future research on effective professional development.

Further work is essential to establish a common measure to assess the effectiveness of professional development programs within educator populations. The development of the ISTDI (Murray, 2010) is helpful to begin this process based on the core features of professional development. The identification of additional factors following the administration of the ISPDI shows the opportunity to expand the instrument or to review the items to be consistent with the five core features identified in the literature.

The data collected in the EARCOS region has been a valuable contribution to the understanding of effective professional development practices. Researchers may conduct further studies in other regions or locations around the world to see if findings are consistent or if variation occurs from region to region.

The items contained within the ISTDI have been useful in two separate studies targeting two populations. The first was a sample of administrators with U.S. independent schools, and the second involved teachers working in EARCOS member schools. Research has indicated that administrators typically give higher ratings to the same professional development experiences than participating teachers (Bingham & White, 1993; Desimone, 2006). Further study is required within a sample population targeting administrators and teachers to see if perceptions would vary.

As the results from this study indicated relatively high levels of effectiveness compared to other populations, further study of EARCOS member schools may be necessary. Using results from a perception measure, such as the ISPDI, may be helpful to identify individual schools with high perceptions of effectiveness. Researchers may conduct qualitative analysis of the professional development program of those schools to identify structures supporting the implementation of effective professional development. This type of qualitative study could also be used to identify schools with high levels of effectiveness based on organizational or individual level variables. Identifying structures supporting effective professional development experiences for secondary teachers would help schools to improve the professional development opportunities for all educators.

Based on the findings from this study, elective, specialist, or support teachers had higher perceptions of effective professional development than core area teachers. Since

most professional development experiences are organized for core discipline teachers, it would be very interesting to understand why elective, specialist, or support teachers within the EARCOS region had higher perceptions. Further research could be conducted in alternate settings to ascertain whether these results could be replicated. Alternatively, more qualitiative measures could be utilized with the EARCOS population to investigate why elective, specialist or support teachers had higher perceptions of their professional learning experiences.

The results indicated that teachers within the EARCOS region felt the observation visits to other schools, mentoring or coaching, and participation in networks of teachers were the least effective professional development activities. These activities were also the ones that the fewest number of EARCOS teachers had access to. A study could be conducted to ascertain whether those teachers who had access to these activities felt they had access to effective professional development.

Another significant opportunity for future research would be to try and ascertain whether perceptions of effective professional development are correlated with student achievement data. Using the ISPDI, researchers may gather perceptions data from schools and subsequently compare them with a consistent measure of student achievement. Once the data is available, researchers could conduct the analysis to see if correlation exists between high perceptions of effectiveness and high student achievement.

Final Reflection

Many schools are investigating models of educational reform, and professional development is a major initiative to ensure quality within school systems around the

world. Although further research is necessary to improve professional development opportunities, this study may be a baseline for the experiences of educators working in EARCOS member schools. These educators have indicated their experiences are well aligned with the literature regarding effective professional development. In addition, organizational (school division, proprietary status) and individual level variables (years of experience, teaching role) can apparently have an impact on the perceptions of educators. Understanding of these results can be helpful for schools to better align their professional development programs and specifically target areas for possible improvement.

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Appendix A

Table A1

Frequency and Percentage of Teachers in Each EARCOS School

School	Teachers	
	Country	*f*
Access International Academy Ningbo	China	27
American International School Hong Kong	Hong Kong	57
American International School of Guangzhou	China	97
American Pacific International School	Thailand	39
American School in Japan	Japan	147
American School in Taichung	Taiwan	25
American School of Bangkok	Thailand	85
Aoba-Japan International School	Japan	40
Asia Pacific International School	Korea	70
Ayeyarwaddy International School	Myanmar	100
Bali International School	Indonesia	37
Bandung Alliance International School	Indonesia	34
Bandung International School	Indonesia	27
Bangalore International School	India	74
Bangkok Patana School	Thailand	238
Beijing BISS International School	China	53
Beijing City International School	China	103
Beijing International Bilingual Academy	China	120
Berkeley International School	Thailand	26
Brent International School Baguio	Philippines	28
Brent International School Manila	Philippines	121
Brent International School Subic	Philippines	45
Busan Foreign School	Korea	28
Busan International Foreign School	Korea	88
Canadian Academy	Japan	64
Canadian International School of Hong Kong	Hong Kong	153
Canadian International School,Tokyo	Japan	34
Carmel School Association Elsa High School	Hong Kong	39
Cebu International School	Philippines	48
Chadwick International School	Korea	101
Chatsworth International School	Singapore	39
Chiang Mai International School	Thailand	55
Chinese International School	Hong Kong	171
Christian Academy in Japan	Japan	46
Concordia International School Hanoi	Vietnam	16

School	Teachers	
	Country	*f*
Concordia International School Shanghai	China	133
Concordian International School	Thailand	120
Dalat International School	Malaysia	48
Dalian American International School	China	54
Dominican International School	Taiwan	39
Dostyk American International School	Kazakhstan	11
Ekamai International School	Thailand	130
Faith Academy, Inc.	Philippines	50
Fukuoka International School	Japan	28
Garden International School	Malaysia	260
Grace International School	Thailand	70
Gyeonggi Suwon International School	Korea	94
Gyeongnam International Foreign School	Korea	17
Hillcrest International School	Indonesia	20
Hokkaido International School	Japan	22
Hong Kong Academy	Hong Kong	90
Hong Kong International School	Hong Kong	233
Hsinchu International School	Taiwan	28
International Christian School-Hong Kong	Hong Kong	117
International Christian School-Pyongtaek	Korea	23
International Community School-Bangkok	Thailand	89
International Community School-Singapore	Singapore	45
International School Bangkok	Thailand	218
International School Eastern Seaboard	Thailand	39
International School Ho Chi Minh City	Vietnam	129
International School Kuala Lumpur	Malaysia	195
International School Manila	Philippines	209
International School of Beijing	China	196
International School of Bogor	Indonesia	6
International School of Brunei	Brunei	84
International School of Kuantan	Malaysia	12
International School of Myanmar	Myanmar	84
International School of Phnom Penh	Cambodia	73
International School of Qingdao	China	60
International School of Riau	Indonesia	28
International School of Suva	Fiji	56
International School of the Sacred Heart	Japan	64
International School of Tianjin	China	66
International School of Ulaanbaatar	Mongolia	53
International School of Yangon	Myanmar	54
Ipoh International School	Malaysia	116

School	Teachers	
	Country	*f*
ISS International School	Singapore	83
Jakarta International School	Indonesia	276
Kaohsiung American School	Taiwan	54
KIS International School	Thailand	60
Korea International School	Korea	178
Korea International School - Jeju Campus	Korea	60
Korea Kent Foreign School	Korea	29
Kunming International Academy	China	45
Kyoto International School	Japan	7
Lanna International School Thailand	Thailand	47
Marist Brothers International School	Japan	27
Medan International School	Indonesia	8
Mont'Kiara International School	Malaysia	117
Morrison Academy	Taiwan	92
Mt. Zaagkam International School	Indonesia	18
Nagoya International School	Japan	44
Nakornpayap International School	Thailand	62
Nanjing International School	China	100
Nishimachi International School	Japan	55
NIST International School	Thailand	167
North Jakarta International School	Indonesia	23
Northbridge International School Cambodia	Cambodia	58
Oberoi International School	India	134
Osaka International School	Japan	39
Oskaka YMCA International School	Japan	15
Pasir Ridge International School	Indonesia	14
Prem Tinsulanonda International School	Thailand	70
QSI International School of Shekou	China	130
Rainbow International School	Korea	23
Ruamrudee International School	Thailand	172
Saigon South International School	Vietnam	90
Saint Maur International School	Japan	61
Seisen International School	Japan	72
Seoul Foreign School	Korea	181
Seoul International School	Korea	101
Shanghai American School	China	358
Shanghai Community International School	China	260
Shekou International School	China	95
Singapore American School	Singapore	365
St. John's School	Guam	65
St. Mary's International School	Japan	91

School	Teachers	
	Country	*f*
St. Michael's International School	Japan	21
Stamford American International School	Singapore	249
Surabaya International School	Indonesia	45
Suzhou Singapore International School	China	135
Taejon Christian International School	Korea	80
Taipei American School	Taiwan	250
Teda International School	China	49
Thai-Chinese (American) International School	Thailand	92
The Alice Smith School	Malaysia	146
The Harbour School	Hong Kong	43
Tianjin International School	China	72
Tohoku International School	Japan	11
Tokyo International School	Japan	42
United Nations International School of Hanoi	Vietnam	100
United World College of South East Asia	Singapore	500
Utahloy International School, Guangzhou	China	120
Vientiane International School	Laos	54
Wells International School	Thailand	60
Western Academy Beijing	China	175
Wuhan Yangtze International School	China	25
Xiamen International School	China	62
Yangon International School	Myanmar	53
Yogyakarta International School	Indonesia	25
Yokohama International School	Japan	83
Yongsan International School of Seoul	Korea	108

Appendix B

Cover Letter for EARCOS Heads of School

Subject: Professional Development Study – Please Participate

February 27, 2015

Dear Head of School:

My name is Mark Hardeman, and I am the Middle School Principal at the International School of Beijing. As a doctoral candidate in Educational Leadership at Lehigh University, I am conducting a research study that will assess the status of professional development programs within the EARCOS region. This study will assess the perceptions of teachers in the EARCOS region, identify what types of experiences EARCOS teachers have access to, and which experience they find to be most/least effective for their professional development. Although similar studies have taken place in North America, this will be the first study that will measure teachers' perceptions of professional development within an international school context.

As an EARCOS member school, responses from your school's teaching faculty are particularly relevant and helpful. The experiences of your teachers are critical to a successful study, and will be extremely useful in providing an overall picture of the professional development opportunities that exist within EARCOS schools and those activities that teachers perceive as valuable to their professional development. The survey instrument has been rigorously reviewed to ensure that the collected data are relevant and valid. In addition, I assure you that the strictest confidentiality will be maintained throughout this study. No distinguishing data on the survey would identify the participants in the study, and participation is totally voluntary. Furthermore, data will be reported in aggregate form only, with no identification of individuals or schools. Please retain this letter for your information regarding informed consent and reference.

I understand that your teaching faculty members are extremely busy, but I would greatly appreciate it if you could help support this study by asking them to complete this short survey. If you are willing to facilitate completion of this survey, I would ask that you verify your schools participation by sending me an email (mbh210@lehigh.edu). This email will help to identify participating schools and will enter your school in a draw for one free registration at the 2015 EARCOS Leadership Conference. Furthermore, schools that have more than 10 faculty participants complete the survey will receive a summary of responses that could be used in future professional development planning.

You will find directions for sharing the survey below. I would appreciate it if you would email the text below, including the survey link, to your teaching faculty who have access to professional development opportunities at your school and ask them to complete the survey. If you have any questions or concerns about the study, please feel free to contact

me at mbh210@lehigh.edu or you can contact my academic advisor at Lehigh, George White at gpw1@lehigh.edu

I great appreciate your time and support for this study!

Mark Hardeman
Doctoral Candidate, Lehigh University
Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS
Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix C

The International School Professional Development Inventory

Purpose of the Study and Informed Consent

Dear Colleague:

You are invited to be in a research study to assess the status of professional development opportunities for teachers in EARCOS member schools. You were selected as a possible participant because you are currently employed as an educator in an EARCOS member school. We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

This study is being conducted by Mark Hardeman, a doctoral student in Educational Leadership at Lehigh University, under the direction of Dr. George White, Department of Educational Leadership at Lehigh University.

The purpose of this study is to assess the status of professional development opportunities for teachers in EARCOS member schools. This study will extend the body of educational research available and will help schools in the EARCOS region to better align professional development opportunities for educators. Your participation in this project will help us take on more steps in that direction.

Your participation in this project is voluntary. Your consent will be given when you begin responding to the survey. You may terminate your participation in the survey at any time. Terminating participation or not agreeing to participate in this survey will in no way jeopardize any relations you may have with Lehigh University. If you agree to participate, then please begin by accessing the survey at the following link:

https://www.surveymonkey.com/s/CMG9X8L

We assure you that the strictest confidentiality will be maintained throughout this study. No distinguishing data on the survey would identify you personally, and participation is totally voluntary. Furthermore, data will be reported in aggregate form only, with no identification of individuals who have completed the survey.

As an incentive to participants in this survey you will be asked at the conclusion of the survey to register for a drawing of one of 5 prizes: $50 gift certificates from Amazon.com.

The Institutional Review Board of Lehigh University has reviewed and approved this doctoral dissertation including the distribution of this survey to you for your consideration to participate. If you have any questions about the dissertation or survey please contact Mark Hardeman at mbh210@lehigh.edu. You may also contact Dr. George White of Lehigh University at gpw1@lehigh.edu. Finally, if you have any

questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to email Susan E. Disidore at (610) 758-3020 (email: sus5@lehigh.edu) of Lehigh University's Office of Research and Sponsored Programs. All reports or correspondence will be kept confidential.

If you would like a copy of the completed dissertation, please email the researcher, Mark Hardeman (mbh210@lehigh.edu).

Thank you!

Mark Hardeman
Doctoral Candidate, Lehigh University
Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS
Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix D

Survey Tool

Demographic Information

Thank you for taking the time to complete this survey. The purpose of this survey is to obtain information about the teacher development practices of international schools in the EARCOS region. The information that you will provide will be combined with the information provided by others in statistical reports. No personal data will be included in the reports. Completing this survey is best without any interruptions and the survey will take approximately 15 minutes to complete.

1. What is the name of your current school?

- Access International Academy Ningbo
- American International School Hong Kong
- American International School of Guangzhou
- American Pacific International School
- American School in Japan, The
- American School in Taichung
- American School of Bangkok, The
- Aoba-Japan International School
- Asia Pacific International School
- Ayeyarwaddy International School
- Bali International School
- Bandung Alliance International School
- Bandung International School
- Bangalore International School
- Bangkok Patana School
- Beijing BISS International School
- Beijing City International School
- Beijing International Bilingual Academy
- Berkeley International School
- Brent International School Baguio
- Brent International School Manila
- Brent International School Subic
- Busan Foreign School
- Busan International Foreign School
- Canadian Academy
- Canadian International School of Hong Kong
- Canadian International School, Tokyo
- Carmel School

Figure D1. Survey questions.

Figure D1. Survey questions (Continued)…

Figure D1. Survey questions (Continued)…

Figure D1. Survey questions (Continued)…

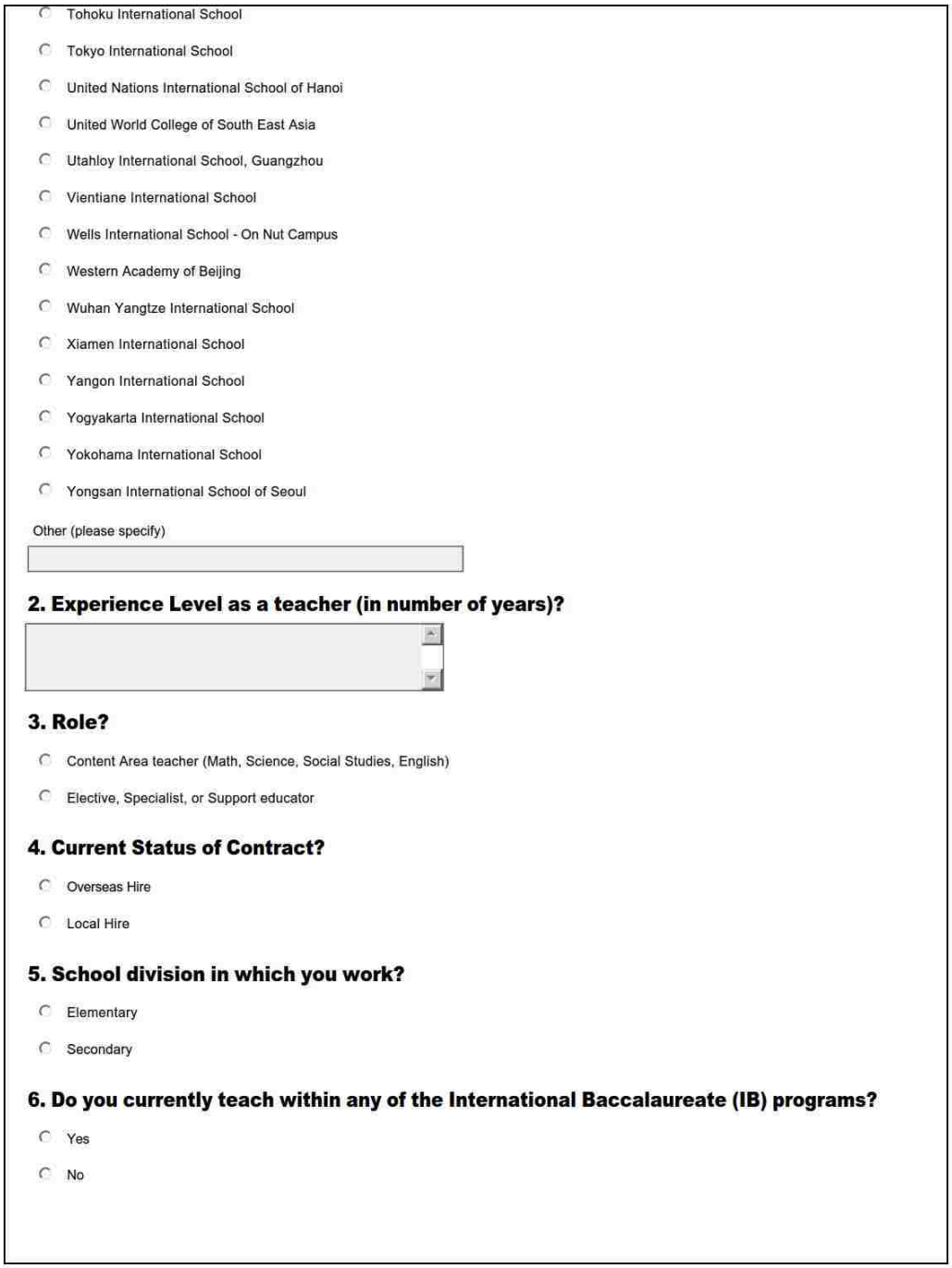


Figure D1. Survey questions (Continued)…

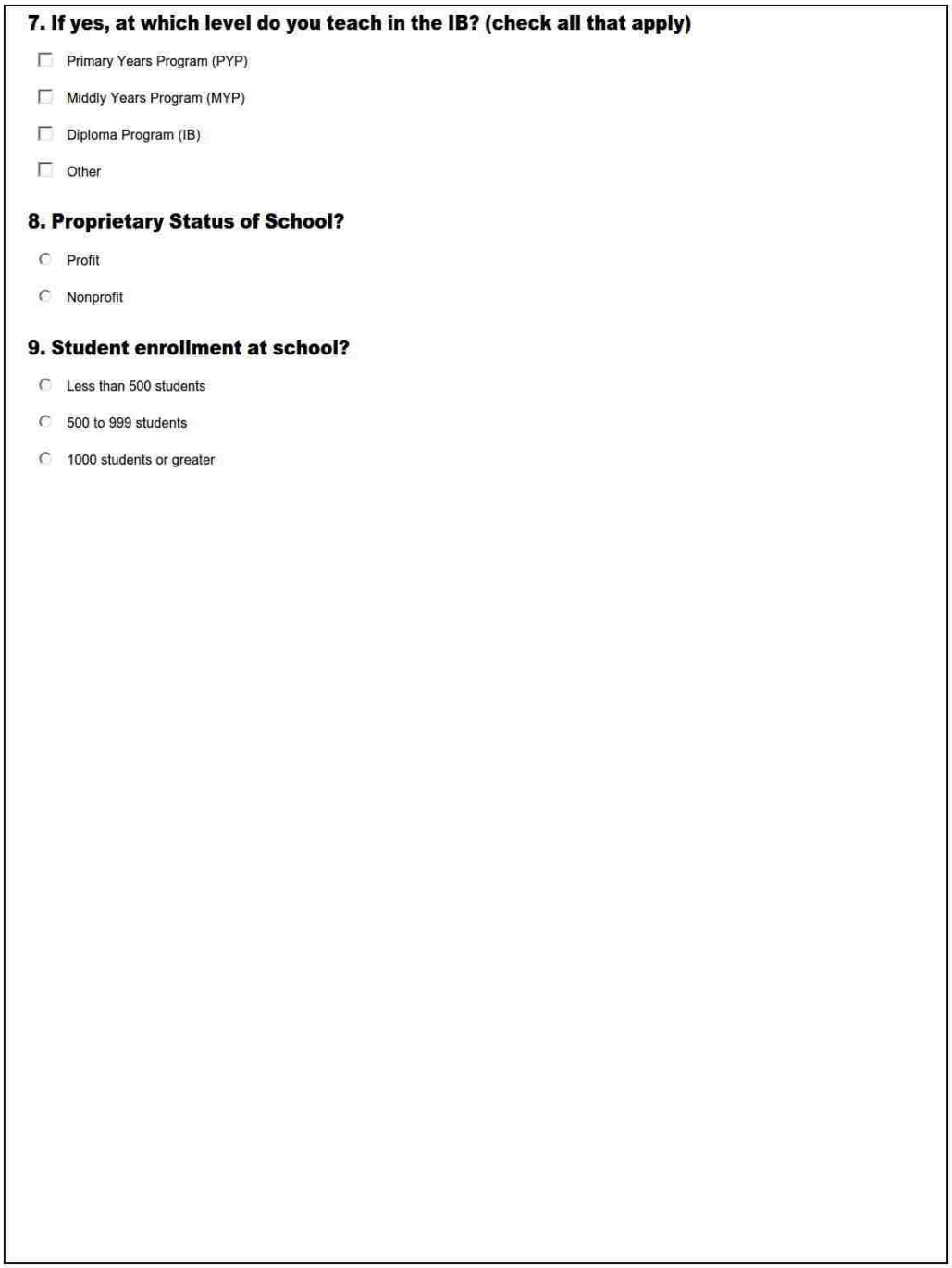
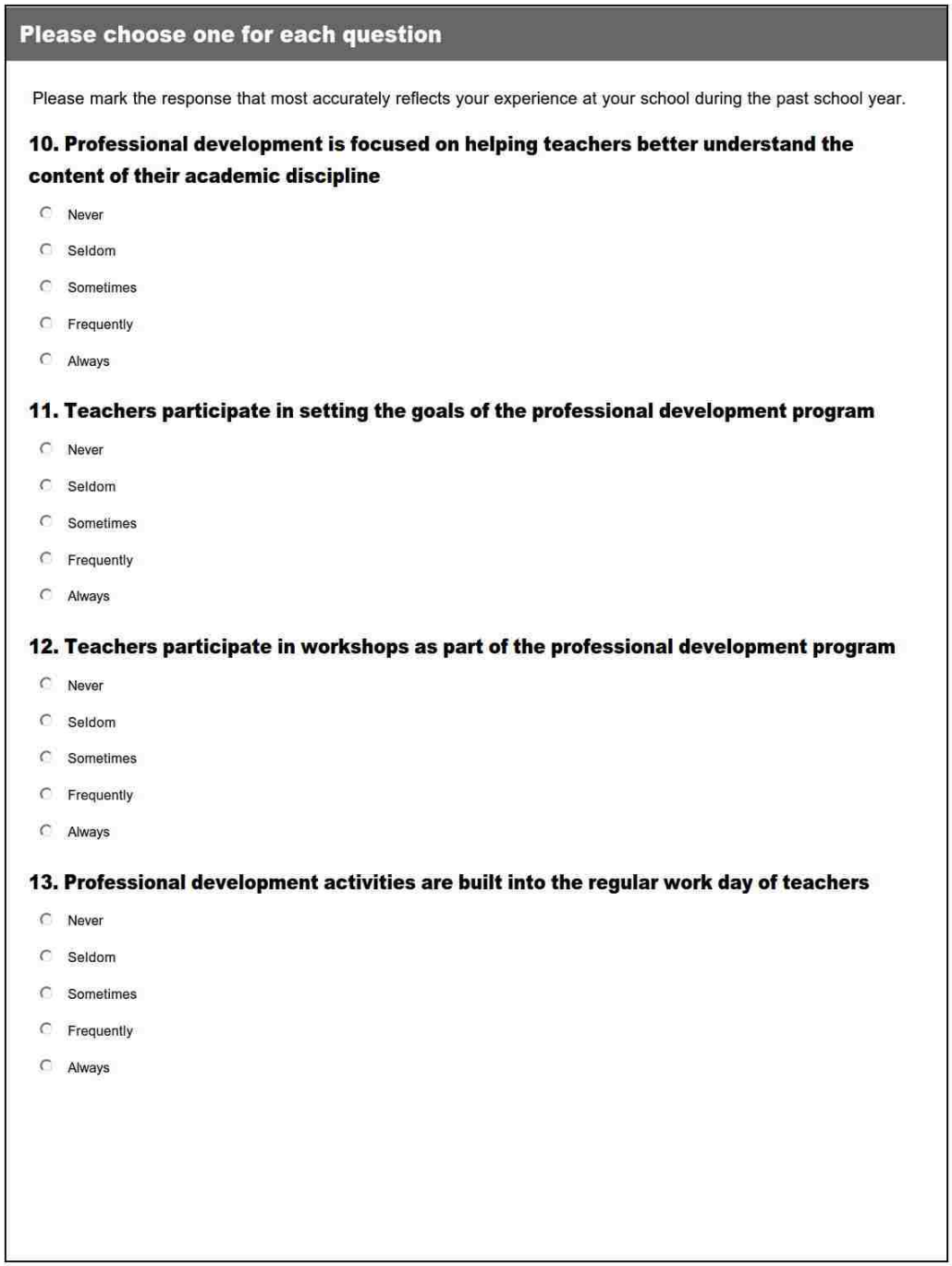


Figure D1. Survey questions (Continued)…



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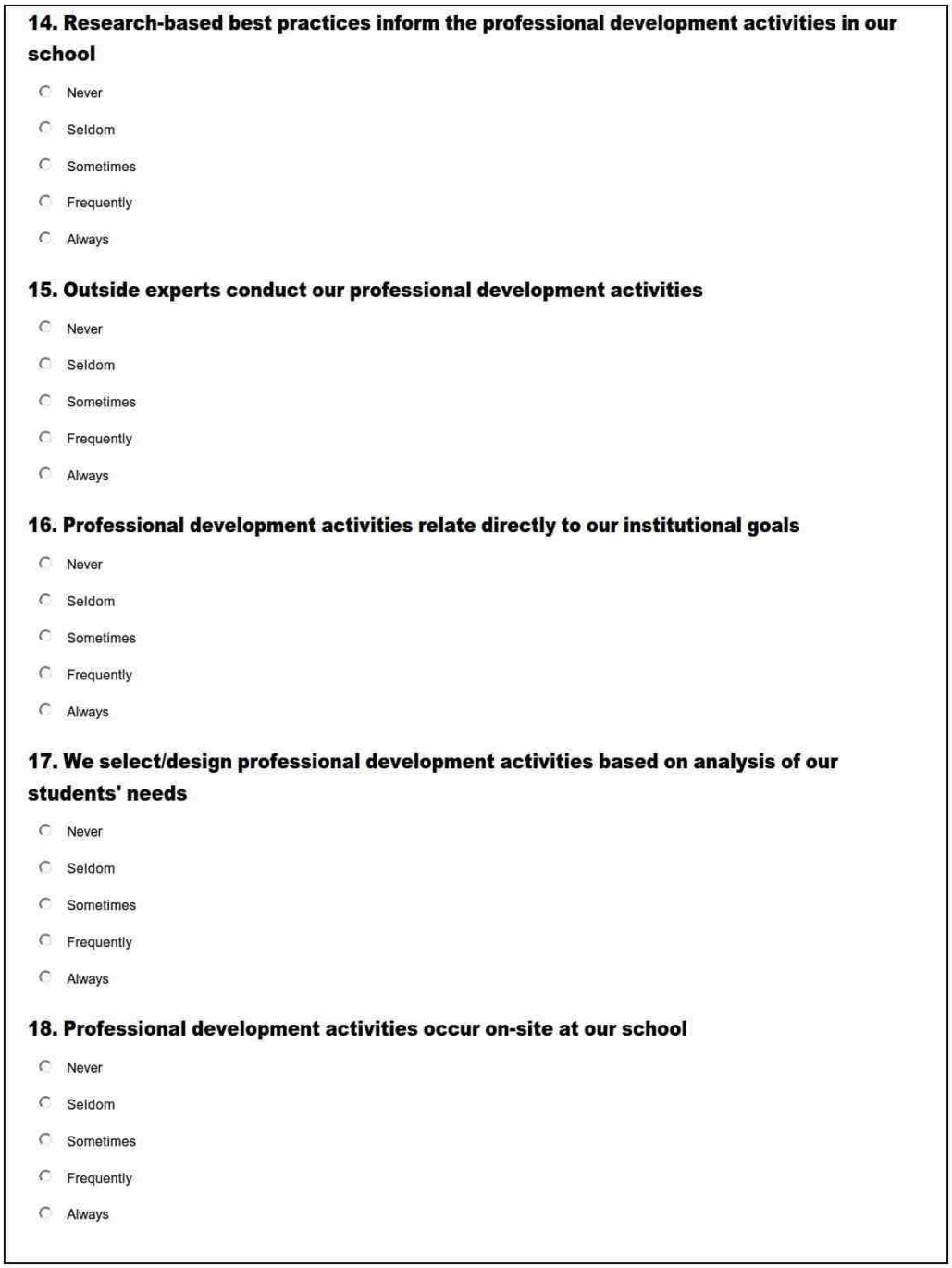


Figure D1. Survey questions (Continued)…

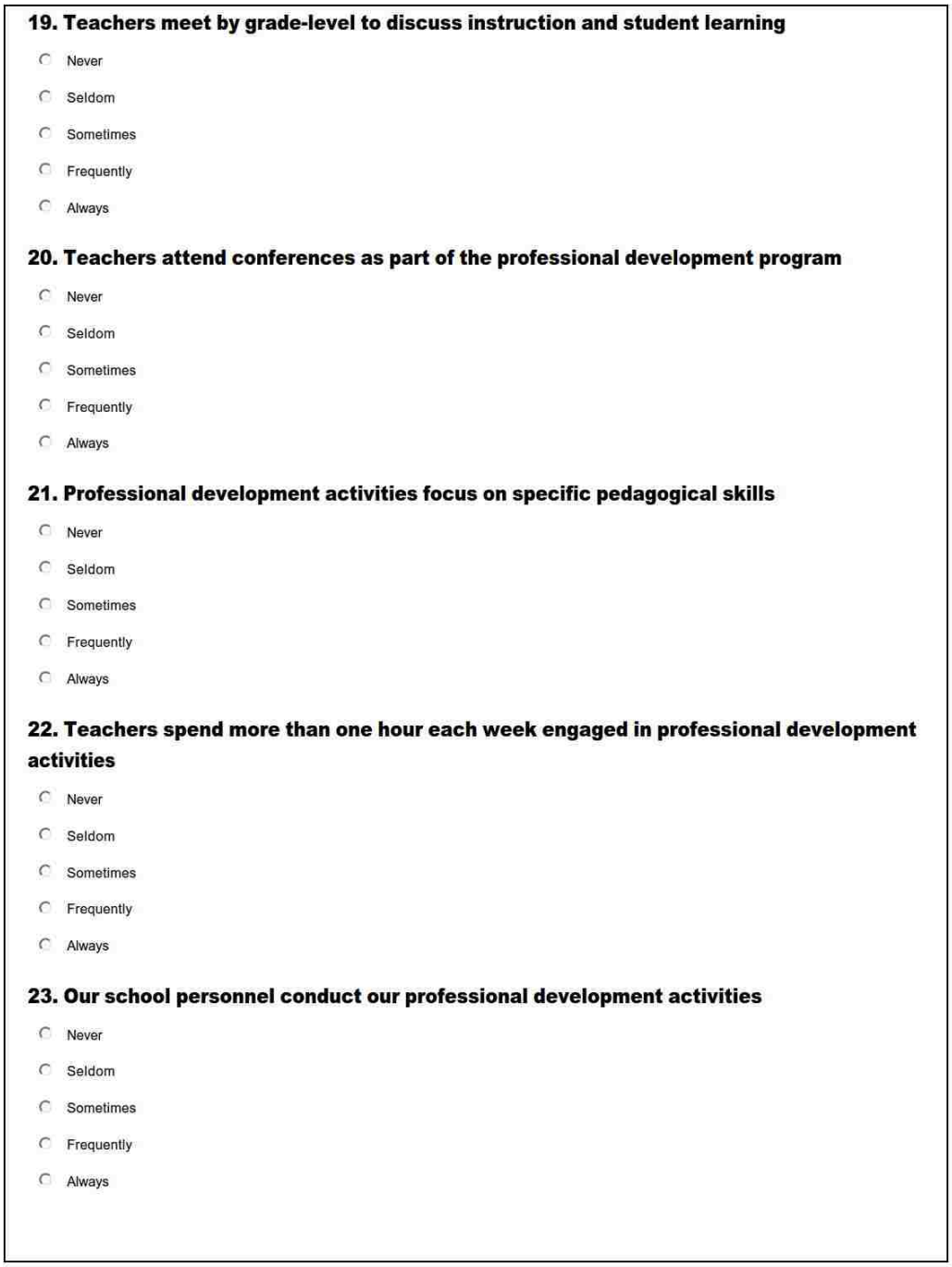


Figure D1. Survey questions (Continued)…

24. Specific teacher needs inform the selection/design of our professional development activities

- Never
- Seldom
- Sometimes
- Frequently
- Always

25. Teacher study groups meet each week as part of our professional development activities

- Never
- Seldom
- Sometimes
- Frequently
- Always

26. Teachers plan instruction together

- Never
- Seldom
- Sometimes
- Frequently
- Always

27. Teachers take University courses as part of the professional development program

- Never
- Seldom
- Sometimes
- Frequently
- Always

28. Professional development activities occur each week

- Never
- Seldom
- Sometimes
- Frequently
- Always

Figure D1. Survey questions (Continued)…

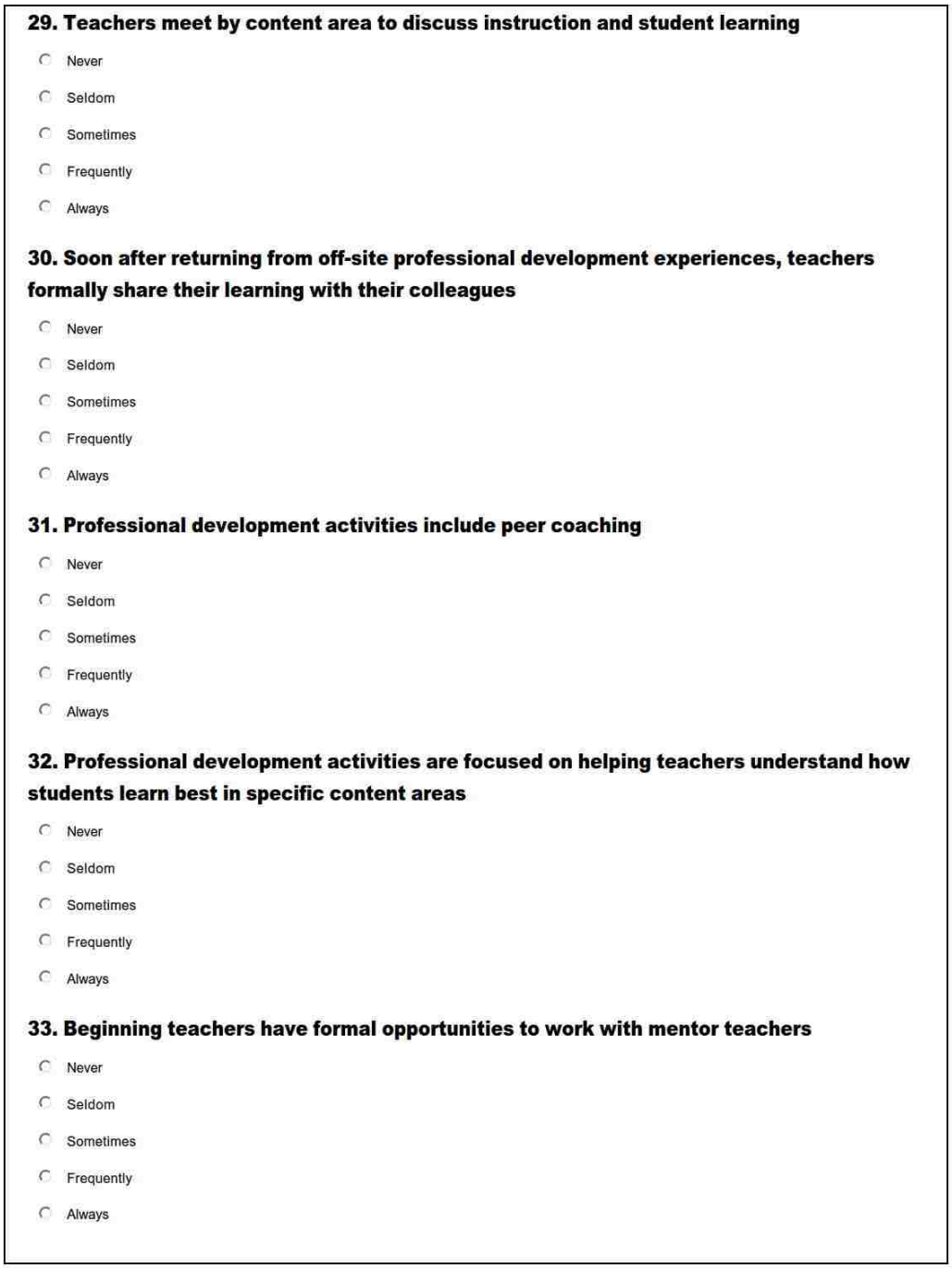


Figure D1. Survey questions (Continued)…

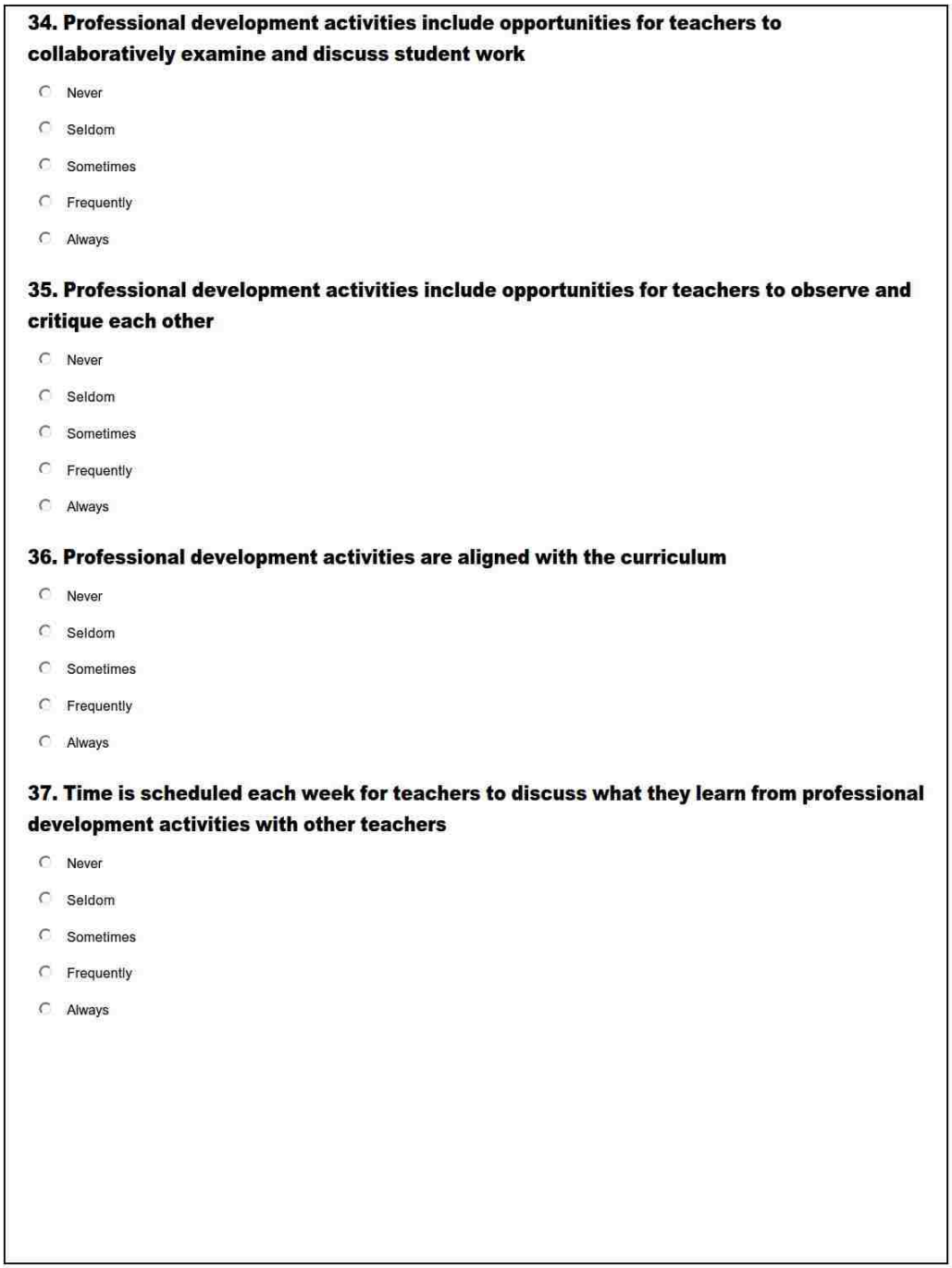


Figure D1. Survey questions (Continued)…

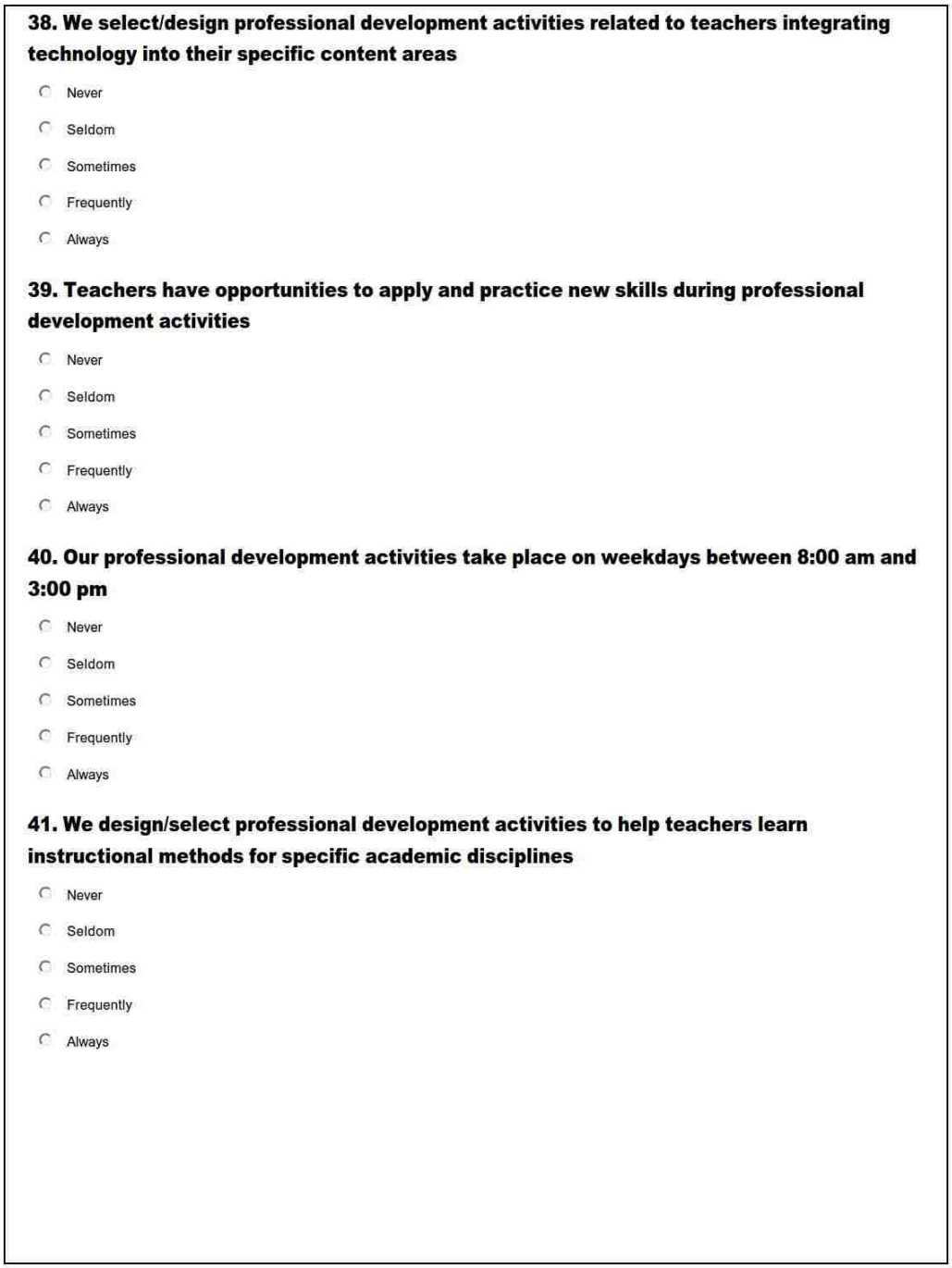


Figure D1. Survey questions (Continued)…

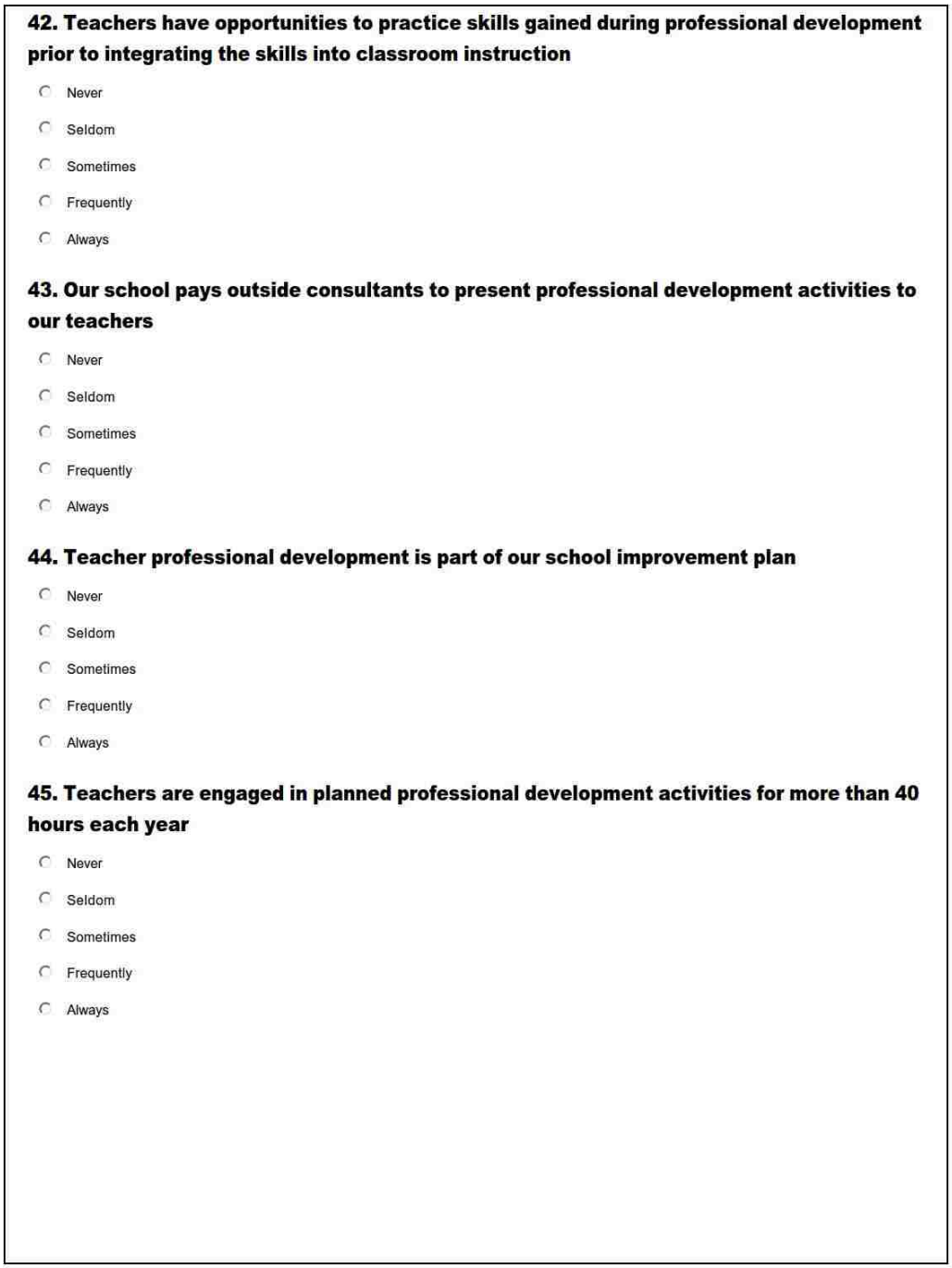


Figure D1. Survey questions (Continued)…

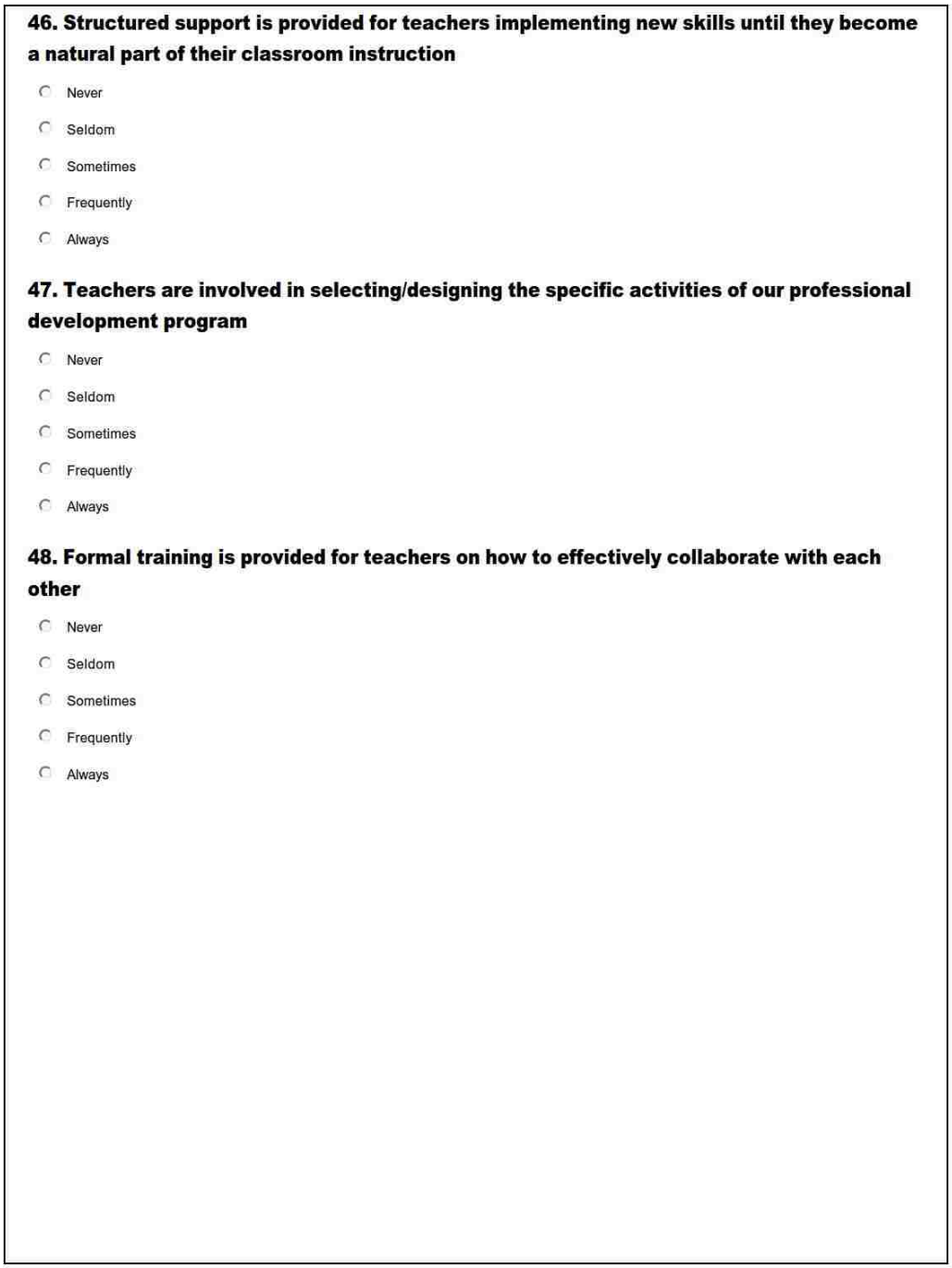
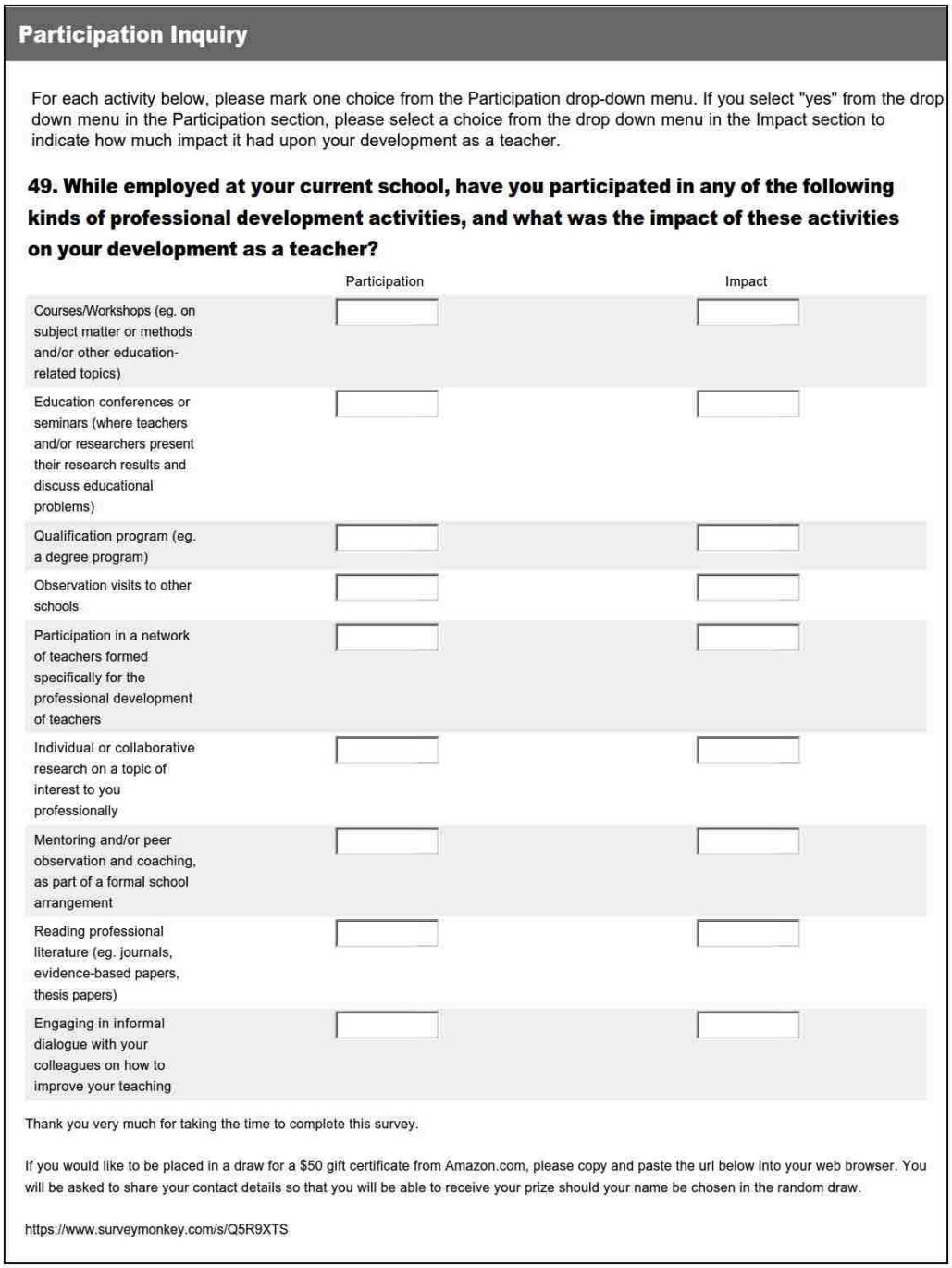


Figure D1. Survey questions (Continued)…



Participation Inquiry

For each activity below, please mark one choice from the Participation drop-down menu. If you select "yes" from the drop down menu in the Participation section, please select a choice from the drop down menu in the Impact section to indicate how much impact it had upon your development as a teacher.

49. While employed at your current school, have you participated in any of the following kinds of professional development activities, and what was the impact of these activities on your development as a teacher?

	Participation	Impact
Courses/Workshops (eg. on subject matter or methods and/or other education-related topics)		
Education conferences or seminars (where teachers and/or researchers present their research results and discuss educational problems)		
Qualification program (eg. a degree program)		
Observation visits to other schools		
Participation in a network of teachers formed specifically for the professional development of teachers		
Individual or collaborative research on a topic of interest to you professionally		
Mentoring and/or peer observation and coaching, as part of a formal school arrangement		
Reading professional literature (eg. journals, evidence-based papers, thesis papers)		
Engaging in informal dialogue with your colleagues on how to improve your teaching		

Thank you very much for taking the time to complete this survey.

If you would like to be placed in a draw for a $50 gift certificate from Amazon.com, please copy and paste the url below into your web browser. You will be asked to share your contact details so that you will be able to receive your prize should your name be chosen in the random draw.

https://www.surveymonkey.com/s/Q5R9XTS

Figure D1. Survey questions (End)

Appendix E

Draft Email (To be sent by head of school to teachers)

Dear Colleague:

My name is Mark Hardeman, and I am the Middle School Principal at the International School of Beijing. As a candidate for a doctorate in Educational Leadership at Lehigh University, I am conducting a research study that will assess the status of professional development programs within the EARCOS region. This study will assess the perceptions of teachers in the EARCOS region, identify what types of experiences EARCOS teachers have access to, and which experience they find to be most/least effective for their professional development. As a teacher at an EARCOS member school, you have been selected for inclusion in this study.

Your participation is critical to this study, so I would truly appreciate if you would consider completing this web-based survey. I assure you that the strictest confidentiality will be maintained throughout this study. No distinguishing data on the survey would identify you personally, and participation is totally voluntary. Furthermore, data will be reported in aggregate form only, with no identification of individuals or schools. Please print this page for your information regarding consent and reference.

If you have any questions about the dissertation or survey please contact Mark Hardeman at mbh210@lehigh.edu. You may also contact Dr. George White of Lehigh University at gpw1@lehigh.edu. Finally, if you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to email Susan E. Disidore at (610) 758-3020 (email: sus5@lehigh.edu) of Lehigh University's Office of Research and Sponsored Programs. All reports or correspondence will be kept confidential.

As an incentive to participants in this survey you will be asked at the conclusion of the survey to register for a drawing of one of 5 prizes: $50 gift certificates from Amazon.com.

Please click on the link below. It will take you to the informed consent page of the survey that will provide you with more detailed information on the survey.

LINK

Thank you so much for your time!

Mark Hardeman
Doctoral Candidate, Lehigh University
Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS

Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix F

Subject: 2nd Request, Professional Development Study – Please Participate

March 10, 2015

Dear Head of School:

You are receiving this second request to participate in a doctoral dissertation study to assess the status of professional development opportunities in the EARCOS region. To date, 330 responses came from teachers in the EARCOS region, however, your school's participation would add to the robustness of this study and its results. Please note that the study will be available to complete until the 20th of March.

The purpose of this study is to assess the status of professional development programs within the EARCOS region. This study will assess the perceptions of teachers in the EARCOS region and identify what types of experiences EARCOS teachers have access to, and which experience they find to be most/least effective for their professional development. Although similar studies have taken place in North America, this will be the first study that will measure teacher's perceptions of professional development within an international school context.

If you have any questions about the dissertation or survey please contact Mark Hardeman at mbh210@lehigh.edu. You may also contact Dr. George White of Lehigh University at gpw1@lehigh.edu. Finally, if you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to email Susan E. Disidore at (610) 758-3020 (email: sus5@lehigh.edu) of Lehigh University's Office of Research and Sponsored Programs. All reports or correspondence will be kept confidential.

I understand that your teaching faculty members are extremely busy, but I would greatly appreciate it if you could help support this study by reminding them to complete this short survey. Participating schools will be entered in a draw for one free registration at the 2015 EARCOS Leadership Conference. Furthermore, schools that have more than 10 faculty participants complete the survey will receive a summary of responses that could be used in future professional development planning.

Please send the attached letter below to your teaching faculty, which includes the link that will allow them to access the survey. Once participants have given their consent, they will be given more detailed information on the survey and how I will maintain confidentiality of their responses.

I great appreciate your time and support for this study!

Mark Hardeman
Doctoral Candidate, Lehigh University

Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS
Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix G

Subject: 3rd Request, Professional Development Study – Please Participate

February 22, 2015

Dear XXXXXX:

You are receiving this third request to participate in a doctoral dissertation study to assess the status of professional development opportunities in the EARCOS region. To date, XXX responses came from your colleagues, however, your participation would add to the robustness of this study and its results.

The purpose of this study is to assess the status of professional development programs within the EARCOS region. This study will assess the perceptions of teachers in the EARCOS region and identify what types of experiences EARCOS teachers have access to, and which experience they find to be most/least effective for their professional development. Although similar studies have taken place in North America, this will be the first study that will measure teacher's perceptions of professional development within an international school context.

I understand that your teaching faculty members are extremely busy, but I would greatly appreciate it if you could help support this study by reminding them to complete this short survey. If you are willing to facilitate completion of this survey, I would ask that you verify your schools participation by sending me an email (mbh210@lehigh.edu). This email will help to identify participating schools and will enter your school in a draw for one free registration at the 2015 EARCOS Leadership Conference. Furthermore, schools that have more than 10 faculty participants complete the survey will receive a summary of responses that could be used in future professional development planning.

Please send the letter below to your teaching faculty, which includes the link that will allow them to access the survey. Once participants have given their consent, they will be given more detailed information on the survey and how I will maintain confidentiality of their responses.

If you have any questions about the dissertation or survey please contact Mark Hardeman at mbh210@lehigh.edu. You may also contact Dr. George White of Lehigh University at gpw1@lehigh.edu. Finally, if you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to email Susan E. Disidore at (610) 758-3020 (email: sus5@lehigh.edu) of Lehigh University's Office of Research and Sponsored Programs. All reports or correspondence will be kept confidential.

I great appreciate your time and support for this study!

Mark Hardeman

Doctoral Candidate, Lehigh University
Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS
Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix H

Request for participation in ISPDI Pilot Study

Dear XXXXXX:

My name is Mark Hardeman, and I am the Middle School Principal at the International School of Beijing. As a doctoral candidate in Educational Leadership at Lehigh University, I am conducting a research study that will assess the status of professional development programs within the EARCOS region. This study will assess the perceptions of teachers in the EARCOS region, identify what types of experiences EARCOS teachers have access to, and which experience they find to be most/least effective for their professional development. Although similar studies have taken place in North America, this will be the first study that will measure teachers' perceptions of professional development within an international school context.

To help establish content validity for my survey instrument, I would like to complete a pilot study of this instrument with an experienced group of international school teachers. As my study will gather data from schools in the EARCOS region, I would like to complete this pilot study with a school that is a member of an alternate region. I hope that you would agree to distribute the survey to your faculty members, asking them to complete this survey and provide me with feedback on how long it takes to complete, the organization of the survey and clarity of questions.

You will find directions for sharing the survey below. I would appreciate it if you would email the text below, including the survey link, to your teaching faculty who have access to professional development opportunities at your school and ask them to complete the survey. If you have any questions about the dissertation or survey please contact Mark Hardeman at mbh210@lehigh.edu. You may also contact Dr. George White of Lehigh University at gpw1@lehigh.edu. Finally, if you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), you are encouraged to email Susan E. Disidore at (610) 758-3020 (email: sus5@lehigh.edu) of Lehigh University's Office of Research and Sponsored Programs. All reports or correspondence will be kept confidential.

I great appreciate your time and support for this study!

Mark Hardeman
Doctoral Candidate, Lehigh University
Middle School Principal, International School of Beijing

Dr. Richard Krajczar, Committee Member, Executive Director, EARCOS
Dr. Jill Sperandio, Committee Member, Profession of Education, Lehigh University
Dr. Floyd Beachum, Committee Member, Professor of Education, Lehigh University
Dr. George White, Dissertation Chair, Lehigh University

Appendix I

Feedback form for the ISPDI

Thank you for taking the time to complete the International School Professional Development Inventory. To help improve the survey, prior to collecting data from the target population, I would like your feedback on the following questions. Please know that your input is important, and I will be using your feedback to help improve the ability of this survey to collect important information about the quality of professional development opportunities for your colleagues in international schools.

1. Were the instructions for completing the survey clear?
2. Identify any question (by number) that was confusing or unclear. Please provide a brief reason for your identification of each question and offer a suggested modification to make each question clearer.
3. How long did it take you to complete the survey?

Appendix J

Table J1

Listing of Participating Schools With Frequency and Percentage of Valid Responses

School	*F*	%	Valid %
Beijing BISS International School	5	.7	.7
Beijing City International School	5	.7	.7
Busan Foreign School	3	.4	.4
Cebu International School	8	1.2	1.2
Chatsworth International School	5	.7	.7
Chinese International School	9	1.3	1.3
Concordia International School Hanoi	14	2.1	2.1
Concordia International School Shanghai	35	5.2	5.2
Concordian International School	1	.1	.1
Faith Academy, Inc.	22	3.3	3.3
Fukuoka International School	4	.6	.6
International Christian School - Hong Kong	6	.9	.9
International Community School - Bangkok	2	.3	.3
International School Bangkok	13	1.9	1.9
International School of Beijing	75	11.1	11.2
International School of Kuala Lumpur	20	3.0	3.0
International School of Qingdao	15	2.2	2.2
International School of Ulaanbaatar	1	.1	.1
International School Suva	10	1.5	1.5
ISE International School	1	.1	.1
ISS International School	1	.1	.1
Jakarta International School	60	8.9	8.9
Kaohsiung American School	3	.4	.4
Korea Kent Foreign School	2	.3	.3
Lanna International School Thailand	15	2.2	2.2
Nagoya International School	5	.7	.7
Nanjing International School	17	2.5	2.5
Osaka International School	2	.3	.3
Phuket International Academy Day School	22	3.3	3.3
QSI International School of Shekou	20	3.0	3.0
Ruamrudee International School	40	5.9	6.0
Saigon South International School	7	1.0	1.0
Seoul Foreign School	2	.3	.3

School	*F*	%	Valid %
Seoul International School	15	2.2	2.2
Shanghai American School	40	5.9	6.0
Shanghai Community International School - Hangzhou Internati	13	1.9	1.9
Shekou International School	6	.9	.9
Taejon Christian International School	30	4.4	4.5
Tianjin International School	15	2.2	2.2
Tohoku International School	1	.1	.1
United Nations International School of Hanoi	27	4.0	4.0
United World College of South East Asia	1	.1	.1
Vientiane International School	8	1.2	1.2
Wells International School - On Nut Campus	18	2.7	2.7
Western Academy of Beijing	27	4.0	4.0
Yangon International School	4	.6	.6
Yokohama International School	19	2.8	2.8
Total	674	99.9	100.0
Missing system	1	.1	
Total	675	100.0	