Assessing the Status of Professional Learning Opportunities in U.S. Independent Schools

by

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Abstract

Research has begun to create a consensus about the essential characteristics of professional learning opportunities that impact teachers' knowledge and practices. These key characteristics include duration, teacher collaboration, active learning, a content knowledge focus, and a connection to school goals. A recent national study (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009) found that professional development practices in U.S. public schools do not meet the new standards for effective teacher professional development, but no research exists on professional development practices in U.S. independent schools. For U.S. independent schools to move towards the standards established for effective professional development, information about the status of teacher learning in independent schools is needed. The present study addressed this problem by conducting a national survey of independent schools to assess the extent to which professional development opportunities in independent schools are aligned with research findings about effective professional development. This study is reported in manuscript format, with one manuscript examining the development and psychometric properties of the survey used in this study, a second manuscript discussing the data showing a significant gap between research-based principles of effective teacher learning and the current professional development programs of U.S. independent schools, and a third manuscript examining the differences in professional development practices across divisions and professional development budget sizes.

Results indicated that a large gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development, with independent schools continuing to rely upon ineffective conventional approaches such as workshops, speakers and conferences. Further, results indicated that this gap is consistent across independent schools with different professional development budgets but does differ across independent school divisions with the gap being larger in upper school and middle school divisions than lower school divisions. The findings of this study highlight the need for independent school leaders and teachers to take action to close the gap between current practices and the effective professional learning practices supported by over a decade of research (Desimone, 2009; Supovitz & Turner, 2000). Now that accurate information about *what* is happening regarding independent school professional learning is available, independent school leaders must move to examining *why* it is happening and *how* independent schools can move closer to the standards established for effective professional development.

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CHAPTER I. INTRODUCTION

Background

Educational reform initiatives in the United States and around the globe are setting high goals for student learning. While many factors contribute to achieving these goals, the changes in instructional practices demanded by the reform programs ultimately depend on teachers (Borko, 2004). Because children are expected to learn more complex material in preparation for further education and work in the 21st century (Wagner, 2008), teachers must learn instructional approaches which develop the knowledge and skills students need to succeed in an increasingly diverse and interconnected world. Ensuring student success necessitates new types of instruction, conducted by teachers who understand content, learning, and pedagogy, who can adapt to the diverse needs of their students, and who can build powerful connections between students' experiences and the goals of the curriculum. Changes on this scale require significant learning on the part of teachers and will not occur without support and guidance (Desimone, 2009).

Realizing the magnitude and importance of the challenge, policymakers, politicians, and educators have made high-quality professional development opportunities for public school teachers a priority in modern educational reform proposals (Fishman, Marx, Best, & Tal, 2003). For example, the No Child Left Behind (NCLB) Act of 2001 requires states to make "high quality" professional development available for all teachers. In addition, The Teaching Commission (2004) has cautioned that "ongoing and targeted professional development is

essential to help teachers meet the demands of recent reforms" (p. 11). Finally, both President Obama and Secretary of Education Arne Duncan and have made professional development a priority in their Education Agenda (*The Agenda: Education*, 2009). The theory of action underlying these calls for professional development opportunities is that improving the knowledge and skills of teachers will lead to higher quality instruction and, in turn, increased student learning (Borko, Elliott, & Uchiyama, 2001; Youngs & King, 2002).

Although improving professional development practices in U.S. public schools has become a focus for policymakers, educators, and researchers, there has been no call from politicians and the public for improved professional learning opportunities for independent school teachers. Nevertheless, independent schools, those schools not dependent upon government funding for their operations, are beginning to emphasize the need for improved professional learning opportunities for their teachers. Like their public school counterparts, independent school leaders and policymakers are calling for "high quality" professional learning experiences for teachers and are making professional development "a key ingredient in the improvement of teacher instruction and student achievement" (Bassett, 2006, p. 3).

The Purpose of the Study

For many years the dominant form of professional development available to teachers was "in-service training" consisting of workshops, speakers, and short-term courses that offer teachers new information on a particular aspect of their work (Webster-Wright, 2009). Educational researchers have criticized such approaches for more than a decade. In her presidential address to the American Educational Research Association, Borko (2004) described these forms of professional development as "woefully inadequate" (p. 2). Researchers have consistently demonstrated the ineffectiveness of these "one-shot" professional development

approaches (Guskey, 1986; Ingvarson, Meiers, & Beavis, 2005; Supovitz & Turner, 2000), concluding that they are "intellectually superficial, fragmented, and disconnected from deep issues of curriculum and learning" (Desimone, 2009 p. 182). Furthermore, "one-shot" approaches are not designed to account for what is known about how teachers learn (Putnam & Borko, 1997). The ineffectiveness of traditional professional development practices led Sykes (1996) to call them "the most serious unsolved problem for policy and practice in American education today" (p. 465), while Fullan (2001) observed that "nothing has been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when teachers returned to their classrooms" (p. 315).

The clear ineffectiveness of conventional professional development methods provided the impetus for extensive research on what constitutes effective professional development. Researchers define "high quality" or "effective" professional development as that which results in improvements in teachers' knowledge and instruction, and enhanced student achievement (Whitcomb, Borko, & Liston, 2009).

One significant outcome of the research on high-quality professional development has been a shift in focus from earlier conceptions of professional development as something that is done to teachers, to a new paradigm of professional development where teachers are active participants in their professional growth and learning, and where professional development opportunities are embedded into the daily work of teachers (Clarke & Hollingsworth, 2002). In addition, this research has created a consensus about the essential characteristics of professional development that are critical to increasing teacher knowledge and skills, and which hold promise for increasing student achievement: (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation (Desimone, 2009; Guskey, 2003). Finally, this research

has led to a recognition that professional development is "a product of both externally-provided (e.g., workshops and conferences) and job-embedded activities (e.g., teacher collaboration and peer observation) that increase teachers' knowledge and change their instructional practice in ways that support student learning" (Darling-Hammond, 2005, p. 5). Thus, this new view of professional development includes a vast range of formal and informal activities and interactions which can improve the knowledge and skills of teachers.

Do most U.S. teachers have access to the types of effective professional learning opportunities needed to improve their instruction? A recent national study (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009) found a large gulf between current practices and research-based best practices of effective teacher learning in U.S. public schools, but professional development practices in U.S. independent schools have not been examined. For U.S. independent schools to reach the standards established for effective professional development, and thereby improve teacher instruction and student outcomes, accurate information about the current status of teacher learning opportunities in independent schools must be obtained. The purpose of this study was to assess the extent to which current professional development opportunities in independent schools are aligned with research-based effective professional development practices.

Research Questions

1. What factors in the *Independent School Teacher Development Inventory* are identified through exploratory factor analysis procedures? Are factors corresponding to traditional professional development, and the five features of effective professional development (content, duration, collaboration, active learning, and coherence), established using confirmatory factor analysis?

2. To what extent are professional development practices in U.S. independent schools consistent with research-based principles of effective professional development?

3. To what extent do differences exist in professional development practices in U.S. independent schools across divisions (elementary schools, middle schools, and high schools)?

4. To what extent do differences exist in professional development practices in U.S. independent schools across schools with different professional development budget sizes?

Significance of the Study

With a significant body of research available on what constitutes high-quality professional development, and with a national focus on professional development being essential for improving schools, one would expect that actual professional development practices in U.S. public schools would be approaching many of these quality guidelines. However, several national studies (Blank, de las Alas, & Smith, 2009; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Garet, Porter, Desimone, Birman, & Yoon, 2002) have demonstrated that professional development opportunities in U.S. public schools fall short of meeting standards for effective professional development. Too often, professional learning opportunities continue to consist primarily of the conventional workshops, conferences, and short-term courses that have been shown to be ineffective (Blank, de las Alas, & Smith, 2007). Meanwhile, characteristics of effective professional learning identified in the research are commonly available in nations ranked at the top of international assessment programs in which U.S. students finish in the middle of the pack (Darling-Hammond et al., 2009).

Results on international assessment programs like PISA (Programme for International Student Assessment) and TIMSS (Third International Math and Science Study), combined with the results of the most recent national study (Darling-Hammond et al., 2009) on professional

development practices in U.S. public schools, have increased awareness and concern about the gap between effective professional development characteristics and the current status of teacher development in U.S. public schools. Researchers are currently investigating factors which may be hindering efforts to provide U.S. public school teachers the high-quality professional learning opportunities enjoyed by teachers in many other nations (Blank et al., 2008). Therefore, research efforts have moved from questions about *what* is happening, to *why* it is happening and *how* it can be changed. This shift is leading some researchers and policymakers to believe that professional development practices in U.S. schools can be transformed. For example, Desimone (2009) commented that

> With a consensus about what constitutes effective professional development, and with data about the state of professional development in our schools, we are in position to make significant changes in how teachers learn and teach, and what and how our students learn. (p. 39)

Perhaps owing to assumptions that no need exists (Jorgenson, 2007), educational researchers, politicians, and the public have not scrutinized professional development practices in U.S. independent schools. Nonetheless, National Association of Independent Schools (NAIS) president Patrick Bassett has called for reform in the professional development practices of independent schools, arguing that current professional development practices are outdated and must be "carefully and deliberately connected with best practices identified by researchers" (2006, p. 2) and should "engage teachers in highly targeted research-and-design work whose intent is to transform teaching and learning within the school" (2006, p. 2).

Before U.S. independent schools can realize the goal of aligning teacher learning opportunities with standards for effective professional learning, accurate information about the

current status of teacher learning opportunities in NAIS schools must be obtained. In other words, *what* is happening must be determined before examining *why* it is happening and *how* it can be changed. A large-scale study focused on current professional development practices in U.S. independent schools is needed and the present study is designed to meet this need. With accurate information about the nature of professional development opportunities available to independent school teachers across the United States, independent school leaders can begin to evaluate the needs of the systems in which teachers learn and work, and to assess how to better support the professional learning of teachers.

Methodology

I developed a survey which was utilized in a quantitative cross sectional descriptive research design. The survey was a two-part questionnaire entitled *The Independent School Teacher Development Inventory* (ISTDI). Section I consisted of 40 Likert-type questions developed to collect information about current professional development practices in the schools of the participants, while section II focused on demographic information about the participants and their schools. Questions in section I were developed to address the specific research questions of this study. Common themes identified in review of the professional development literature provided the basis for survey item development. I established the appropriateness of item content through two rounds of expert reviews, cognitive interviews, and a field test, while the level of reliability of the survey results was determined by examining internal consistency reliability (Desimone, 2009; Pedhazur & Schmelkin, 1992). I investigated the dimensions underlying the 40 items of the survey instrument through two factor analysis procedures. I randomly divided the respondents into two halves and conducted exploratory factor analysis on

the data from one half and confirmatory factor analysis with the data from the other half (Hu and Bentler, 1999).

Along with an introductory letter, the researcher distributed the surveys to all 3422 NAIS division heads (NAIS terminology for principals) using QuestionPro, a commercial electronic survey service. Participants consented by completing the survey and returning it electronically to QuestionPro. To maximize the response rate, reminder e-mails were sent to the target population at one and three week intervals after the initial distribution.

Data Analysis

I used the computer program Statistical Package for the Social Sciences (SPSS) 18.0, and the computer program AMOS, to organize and analyze data to address the four research questions that guided this study. I randomly divided the respondents into two halves to investigate the number of factors comprising the ISTDI (research question one). I used exploratory factor analysis procedures on the data from one half of the respondents to determine the number and composition of factors underlying the 40 items of the survey. I then used confirmatory factor analysis procedures on the data from the second half of respondents to confirm that the factors identified in the exploratory factor analysis results provided the best fit for the data.

To examine the extent to which professional development practices in U.S. independent schools are consistent with research-based principles of effective professional development (research question two) , I analyzed factor scores and individual item scores for the ISTDI using descriptive statistics such as percentages, means, and standard deviations. I used these data to determine the prevalence of both effective and ineffective professional development

opportunities in independent schools, as well as compare the relative prevalence of one type of professional development opportunity with another one.

To address the extent to which professional development practices differ across independent school divisions (research question three), I analyzed factor scores and individual item scores for the ISTDI for the three division types using descriptive statistics such as percentages, means, and standard deviations. In addition, multiple one-way ANOVA's were conducted to determine whether statistically significant differences existed between the three division types on factor scores.

Finally, to address the extent to which professional development practices differ across independent schools with different professional development budget sizes (research question four), I analyzed factor scores for the ISTDI for the five professional development budget categories using descriptive statistics such as means and standard deviations. Also, multiple one-way ANOVAs were conducted to determine whether statistically significant differences existed on factor scores between schools with different professional development budgets.

Overview of the Study

This study is reported in manuscript format and includes the following sections: Chapter II, Review of Literature, which provides an overview of literature related to the topics addressed throughout this study including the historical antecedents of the current emphasis on professional development for public school teachers, the changing definitions of professional development over time; characteristics of ineffective and effective professional development practices; the current status of professional learning in U.S. public schools; the unique characteristics of the independent school context; and the current view of professional learning in independent schools.

Chapter III, Methods, discusses the design of the survey instrument (ISTDI) used in this study and the research design chosen to address the research questions guiding this study. Chapters IV, V, and VI are manuscripts that provide an in-depth exploration of the study's research questions. Conclusions and recommendations based on the research findings are included with each manuscript. Chapter IV, The Psychometrics of The Independent School Teacher Development Inventory, examines how the researcher established the reliability and validity of the instrument, and how the researcher used factor analysis procedures to examine the underlying dimensions of the instrument. Chapter V, A Status Report on Teacher Professional Learning in United States Independent Schools, examines whether current practices in U.S. independent schools are aligned with what research shows to be effective professional learning practices. Chapter VI, The Current State of Professional Development in U.S. Independent Schools: Implications for Independent School Leaders and Teachers, explores the extent to which differences exist in professional development practices across independent school divisions and across independent schools with different professional development budget sizes. In addition, it explores how the data about current professional learning practices in independent schools can lead independent school leaders to examine why there are gaps between best practices and current practices, and how things can be changed. Chapter VII offers a summary of the entire study, conclusions, and recommendations. Final sections include a reference list and appendices.

CHAPTER II. REVIEW OF LITERATURE

Introduction

This chapter presents a review of literature exploring research related to the status of professional development practices in U.S. independent schools including (1) past and current definitions of professional development, (2) the key role of professional development in educational reforms, (3) models indicating how professional development impacts teacher and student learning, (4) traditional methods of professional development in schools, (5) characteristics of effective professional development, (6) the status of professional development practices in U.S. public schools, and (7) the unique characteristics of U.S. independent schools. The purpose of this review of literature is to discuss and critique research related to the professional learning of teachers, situate the current study within this existing knowledge base, identify gaps in the current research, and demonstrate how the current study will address one specific gap in the research on the professional development of teachers.

Defining Professional Development

Teachers experience a wide variety of activities and interactions which can increase their knowledge and skills and improve their teaching practice, as well as contribute to their personal, social, and emotional growth as teachers. These experiences include formal, structured seminars given on in-service days, and more informal discussions with other teachers about instruction techniques, embedded in teachers' everyday work lives. Recognizing this, the current definition of professional development includes both formal activities delivered by outside experts and job-

embedded activities that enhance teachers' knowledge and skills and alter their classroom practice in ways that support student achievement (Darling-Hammond et al., 2009).

This perspective is new to teaching because for years the only form of professional development available to teachers was "staff development" or "in-service training," usually consisting of workshops, speakers, or short-term courses that would offer teachers new information on a particular aspect of their work (Bredeson, 2002; Clarke & Holingsworth, 2002). This was often the only type of training teachers would receive and it was usually unrelated to the teachers' daily work. Information was transmitted to teachers and change was conceptualized as something to be imposed on teachers externally (Guskey, 1986).

Researchers and practitioners have only recently come to view the professional development of teachers as "formal and informal learning opportunities that engage educators' creative and reflective capacities in ways that strengthen their practice" (Bredeson, 2002, p. 663). This shift has been so dramatic that many have referred to it as "reform" teacher learning and a "new paradigm" of professional development (Blank & de las Alas, 2009; Darling-Hammond et al., 2009).

This new thinking about professional development has several important characteristics. First, effective professional development today is based on constructivism rather than on a transmission-oriented model, and as a result teacher change is now seen as a complex process with teachers actively involved in their own growth and learning (Borko, 2004; Desimone, 2009). Second, researchers conceptualize professional development as a long-term process where school leaders provide a series of related experiences to facilitate teacher change (Baniflower, Heck, & Weiss, 2005; Firestone, Mangin, Martinez, & Polovsky, 2005). Third, effective professional development connects professional development activities to the standards

and goals of districts and schools, as well as the daily activities of teachers and learners (Desimone et al., 2002; Guskey & Sparks, 2004). Finally, effective professional learning is a collaborative process where discussions and reflections among teachers are important parts of promoting teacher learning and change (Fishman, Marx, Best, & Tal, 2003; Penuel, Fishman, Yamaguchi, & Gallagher, 2007).

The National Staff Development Council (NSDC, 2008) recently established a new definition of teacher professional development which embodies this new "paradigm" of teacher professional learning. The NSDC defines professional development as a "comprehensive, sustained and intensive approach to improving teachers' and principals' effectiveness in raising student achievement" (Hirsh, 2009, p. 2) which is comprised of the following components:

1. It is aligned with state student academic standards, as well as related to district and school improvement goals.
2. It is conducted among learning teams of educators, including teachers, paraprofessionals, and other instructional staff at the school.
3. It is facilitated by well-prepared school principals and, or, school-based professional development coaches, mentors, or teacher leaders.
4. It occurs multiple times per week or the equivalent of several hours per week.
5. It engages established learning teams of educators in a continuous cycle of improvement that analyzes data to set clear educator learning goals, implements evidence-based learning strategies to improve teacher effectiveness, provides assistance to support teacher learning, and regularly assesses the effectiveness of professional development activities in promoting teacher and student learning. (Hirsh, 2009)

Professional development is an important part of current reform efforts to transform schools and improve academic achievement (Darling-Hammond et al., 2009). Enabling schools to achieve on a large scale the quality of instruction that has a significant impact on student learning requires more intensive and effective teacher professional learning than has been available in the past. The following sections examine the role of professional development in past and current educational reform efforts, discuss the ineffective traditional methods of professional development, and explore more deeply the characteristics of effective professional development approaches being called for by educational researchers and policy-makers today.

The Role of Professional Development in Educational Reform

The launching of *Sputnik* in 1957 by the Soviet Union was a turning point in the history of the U.S. educational system, marking the beginning of an era of standards-based reform (Tyack & Cuban, 1995). Americans viewed the Russian accomplishment as a threat to the nation's security, progress, and political freedom, and demanded changes in the schooling of its children, particularly in the areas of science and math (DeBoer, 2000; Raizen, 1997). The U.S. Congress responded quickly to these demands by passing the National Defense Education Act (NDEA) in 1958 to provide nearly one billion dollars for educational reform (Lappan, 1997; Tyack & Cuban, 1995). The passage of NDEA signaled a change in the role of the federal government in education, as prior to the law's passage educational policy-making had been primarily the domain of state and local governments (McLaughlin, 1975).

While the U.S. public continued to call for educational reform in the 1960s, social instability characterized the decade much more than pressure to transform American schools (Tyack & Cuban, 1995). The Vietnam War and the Civil Rights movement replaced curricular reform in the public consciousness (Bybee, 1997). In response to the Civil Rights Movement,

Congress passed the Elementary and Secondary Education Act (ESEA) in 1965 (Bailey & Mosher, 1968). The ESEA was designed to address the problem of inequality in educational opportunity that had been exposed by the civil rights activists who lobbied for the passage of the Civil Rights Act of 1964 (Jeffrey, 1978).

As the 1960s drew to a close, American fears created by the launching of *Sputnik* had declined. The United States won the space race with the Soviet Union when Apollo 11 landed on the moon in 1969, moving the emphasis of educational reform away from curricular issues to educating the increasingly diverse student body spawned by the Civil Rights movement (Tyack & Cuban 1995; Zhao, 2009). During the 1970s, educational reform efforts were largely aimed at ending discrimination and equalizing opportunities for all students, but by the end of the decade the American public was again becoming anxious that the nation's schools were inadequate to maintain U.S. superiority in the global community (Gordon, 2006).

High quality products produced less expensively overseas threatened key U.S. industries in the late 1970s and early 1980s, and there was widespread public perception that this was caused by American students falling behind international students (Tyack & Cuban, 1995). This led T. H. Bell, the U.S. Secretary of Education, to create the National Commission on Excellence in Education (NCEE) in 1981 to examine the quality of education in the United States (Gordon, 2006). The NCEE report, *A Nation at Risk: The Imperative for Educational Reform* (NCEE, 1983), concluded that U.S. educational institutions had lost sight of the primary purposes of education and called for additional reform in the nation's schools (Zhao, 2009).

Demands for educational improvement in the nation continued to expand during the 1990s. In 1994, President Clinton endorsed a vision of stronger educational standards in the Goals 2000: Educate America Act. Based on the premise that students achieve more when

expectations are raised, Goals 2000 specified goals for U.S. schools to achieve by the year 2000, established more ambitious academic standards for U.S. students, specified methods to assess student progress, and discussed ways to provide the support that students would need to meet the standards (Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009; Zhao, 2009).

The failure of schools to achieve the objectives set in Goals 2000 (Blank & de las Alas, 2009), and the continued concern about the performance of American students relative to their international counterparts(Elmore, 2002; Hiebert, Gallimore, & Stigler, 2002; Stigler & Hiebert, 1999), kept educational reform in the news at the beginning of the new millennium. The No Child Left Behind Act of 2001 (NCLB) expanded federal involvement in America's schools and created tougher accountability measures for states and schools, standardized tests to quantify progress towards goals, and specific professional standards for teachers (Guilfoyle, 2006; Sunderman, Kim, & Orfield, 2005).

The proposed standards-based reforms of NCLB, and the *Education Plan* of President Obama (Obama, 2009), continue to set ambitious goals for student learning today. While many factors contribute to achieving these goals, teachers are ultimately the ones who must adjust their instructional practices to meet the demands called for by the reforms (Borko, 2004). However, "the teaching and learning required in these reforms is not something most American teachers know how to do" (Borko, Elliott, & Uchiyama, 2001, p. 970.). For teachers to move successfully towards these visions requires, in many cases, major changes in their knowledge and beliefs, as well as their instructional practices (Darling-Hammond et al., 2009; Desimone, 2009). Yet, as Borko (2004) has emphasized, "if educational reform efforts are to succeed, it is imperative that teachers meet these challenges" (p. 971).

For teachers to make the required changes they need significant support and guidance. Therefore, the success of current reform efforts is dependent upon creating opportunities for teachers' continual learning and providing sufficient professional development resources to support these opportunities (Buczynski & Hansen, 2009; Guskey, 2002). Since Congress passed Goals 2000 in 1994, recognition of the importance of teacher professional development to the success of educational reform has steadily grown, with corresponding increases in the financial resources committed to professional development at the local, state, and federal levels (Yoon, Duncan, Lee, Scarloss, &Shapley, 2007). For example, in 2005–2006, the federal government spent almost two billion dollars on professional development for teachers, over twice the amount spent ten years earlier (Birman et al., 2007; Darling-Hammond et al., 2009). With the importance of professional development firmly established, and with substantial resources dedicated to professional development each year, it is necessary to understand the theory of action underlying how professional development impacts teacher practices and student learning, and it is critical to understand the essential characteristics of effective professional development activities.

Theoretical Models of Professional Development Action

Researchers agree that the three major goals of teacher professional development programs are change in the knowledge, skills, and attitudes of teachers, change in the classroom practices of teachers, and change in the learning outcomes of students (Clarke & Hollingsworth, 2002; Guskey & Sparks, 2002; Johnson & Marx, 2009). Theoretical models are important tools in helping both researchers and practitioners understand, predict, and explain how and why specific professional development programs and activities are more or less effective in achieving these goals. Traditional theoretical models explaining how professional development activities

accomplish these three goals are often based on a paradigm that implies a deficit in teacher skills and knowledge (Clarke & Hollingsworth, 2002; Guskey, 1986). With this paradigm, change is seen as something that is done to teachers, with teachers as relatively passive participants. Professional development activities emerging from these models, usually "one-shot" speakers and workshops, attempt to change teachers' attitudes and skills by giving them knowledge. It is assumed that any changes in knowledge, skills, and attitudes will impact their instruction, which in turn will result in enhanced student learning (Desimone, 2009; Guskey, 2002). Figure 1 shows this traditional theoretical model of professional development action.

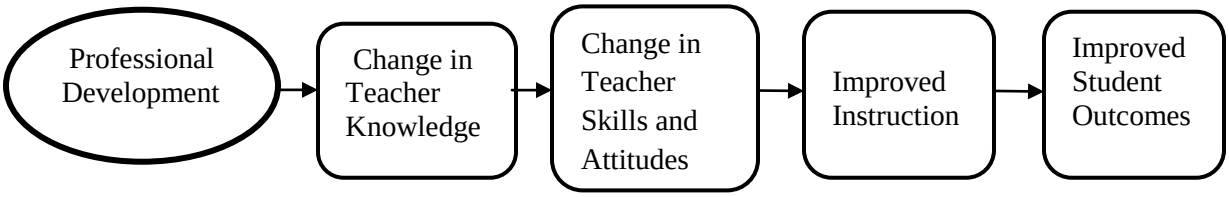


Figure 1. Traditional theoretical model of professional development action.

In the past decade, two factors have combined to create significant revisions in the traditional theoretical model of professional development action. First, there has been a shift in focus from earlier views of professional development as something done to teachers, to professional development as a process requiring teacher engagement and learning (Guskey, 2002; Ingvarson, Meiers, & Beavis, 2005; Loucks-Horsley & Matsumoto, 1999; Youngs & King, 2002). The important change is one of agency: from professional development programs that change teachers from the outside to teachers as active learners deeply involved in their own professional growth through participation in relevant professional development programs (Clarke & Hollingsworth, 2002). Second, it is now understood that the relationship between professional learning activities and improvements in teacher knowledge and instructional practices, and student learning, is much more complex than the linear relationship represented in traditional

theoretical models (Clarke & Hollingsworth, 2002; Guskey, 2002; Yoon et al., 2007). Specifically, researchers have stated that a new model of the theoretical action of professional development should recognize that quality professional development is influenced by multiple factors, and emphasize the interactive nature between professional development activities, teacher learning, and student learning (Baniflower, Heck, & Weiss, 2005; Darling-Hammond, 1995; Garet et al., 2001; Supovitz & Turner, 2000).

Consensus is emerging around an alternative theoretical model of the action of professional development (Desimone, 2009; Yoon et al., 2007). This model represents the complex relationships between the components of professional development, teacher knowledge, skills, and beliefs, classroom practice, and student outcomes. This alternative theoretical model (see Figure 2) follows these steps:

1. Professional development activities consist of three major components. *Content* characteristics refer to the "what" of professional development and consists of the new knowledge, skills, and understandings to be acquired by teachers. *Process* characteristics are the "how" of professional development and concern the types of professional development activities, and the way those activities are planned, organized, implemented, and followed-up. *Context* characteristics refer to the "who", "when", "where", and "why" of teacher professional development, and includes the traits of the specific educators involved in the professional learning, the context in which they work, and the students they teach (Desimone, 2009).
2. Teachers actively participate in the professional development activities, rather than merely being passive recipients of knowledge.

3. The professional development improves teachers' knowledge, skills, and attitudes. This is a significant departure from earlier models which did not recognize the internal transformation which must precede any changes in instructional practice.

4. Teachers use their new knowledge, skills, and attitudes to improve their instruction, their pedagogy, or both. Time for both individual and collaborative reflection is considered to be an important part of making instructional changes.

5. The instructional changes lead to improved student learning. The changes, or lack of changes, in student learning serve as feedback, which impacts the development of future professional development activities. In addition, student learning outcomes provide feedback, which can lead to additional changes in teacher knowledge, skills, and attitudes, and further changes in classroom teaching. Additional research is needed to clarify the extent of and mechanism for these changes.

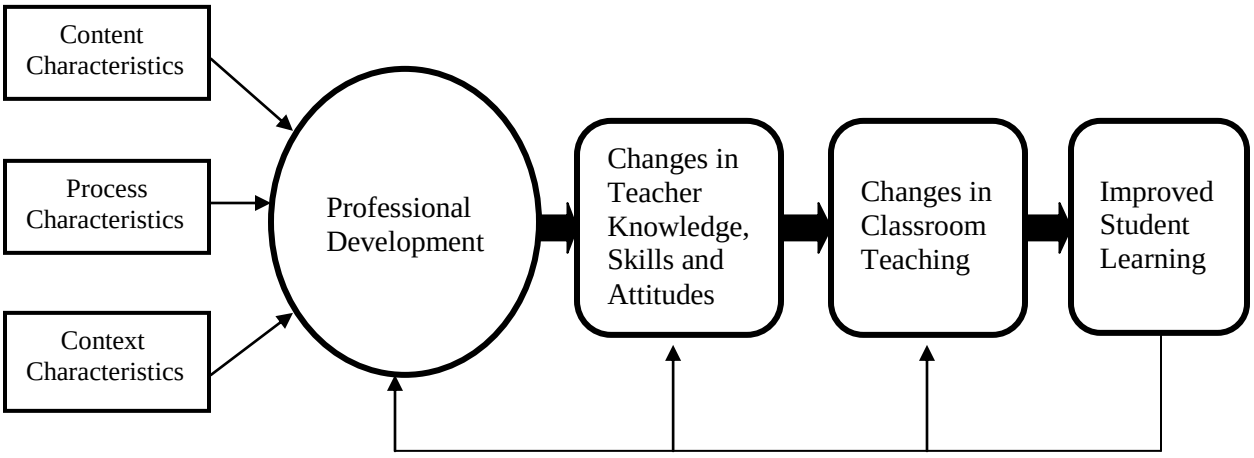


Figure 2. Alternative Theoretical Model of Professional Development Action.

There are several important distinctions between this alternative model of professional development action and the traditional model. First, by specifying that professional development activities include content, process, and context features, the alternative model brings greater understanding about the key variables that must be considered when designing effective professional development programs (Johnson & Marx, 2009). In addition, unlike the traditional model, the alternative model illustrates the importance of a systemic approach to professional development by including feedback loops where student learning outcomes influence changes in classroom teaching, changes in teacher knowledge, skills, and attitudes, and future professional development activities (Fishman, Marx, Best, & Tal, 2003; Gravani, 2007; Hodkinson & Hodkinson, 2005). The alternative model emphasizes that for professional development efforts to succeed they must consider the factors which interact to influence the relationship between professional development and student learning (Blank, de las Alas, & Smith, 2008; Friedman & Phillips, 2004; Johnson, 2007). Although the alternative model does represent advances in understanding about the systemic nature of professional development action, several researchers (Desimone, 2009; Guskey, 2004; Fullan, 2006) have argued that future models should go further to emphasize that changes in behavior often precede changes in teacher attitudes and beliefs.

Researchers have used theoretical models of professional development action to examine the influence of traditional methods of professional development (e.g., workshops and speakers) on teacher and student learning. The following section examines this body of research.

Traditional Methods of Professional Development

Historically, professional development available for teachers has been "in-service training" consisting of workshops, speakers, and short-term courses (Becher, 1999; Cervero, 2001; Guskey, 1986; Webster-Wright, 2009). Often called "one-shot" or "traditional"

professional development, this in-service training is intended to impart information to teachers which will improve their ability to support and improve student achievement (Darling-Hammond & McLaughlin, 1995; Little, 1995;). It is characterized by information transmission rather than information generation or information exchange (Glaser, 2005). District education office administrators create most traditional professional development opportunities in response to specific areas of need they have identified, with little or no input from teachers (Corcoran, 1995; Fraser, 2005; Gravani, 2007). This in-service training is often conducted on compulsory training days managed by the district office, and there is seldom any follow-up, (Borko, 2004; Darling-Hammond, 1995; Fraser, 2005).

Researchers and practitioners have criticized traditional forms of professional development for over a decade. Cohen and Ball (1999) deride traditional professional development as being "intellectually superficial, disconnected from deep issues of curriculum and learning, fragmented, and non-cumulative" (p. 15), while Sparks (2002) says it is "fragmented and incoherent, lacks intellectual rigor, fails to build on existing knowledge and skills, and does little to assist teachers with the day-to-day challenges of improving student learning" (p. 85). The intended participants in the activities, the teachers, do not determine the topics, and the programs do not consider what is known about how teachers learn (Putnam & Borko, 1997). As Lieberman (1995) stated,

> What everyone wants for students—a wide array of learning opportunities that engage students in experiencing, creating, and solving real world problems, using their own experience, and working with others—is for some reason denied to teachers when they are learners. (p. 591)

Multiple studies have supported these criticisms, showing that traditional workshops, speakers, and short-term courses are ineffective in bringing about changes in classroom teaching and student learning (Burbank & Kauchak, 2003; Cohen & Ball, 1999; Farkas, Johnson, & Duffett, 2003; Garet et al., 2001; Gravani, 2007; Howey & Joyce, 2001; Little, 1993; Loucks-Horsley, Hewson, Love, & Stiles,1998; Smylie, 1989; Supovitz & Turner, 2000; Yager; 2005).

Researchers (Blank & de las Alas, 2009; Darling-Hammond et al., 2009) have cited three studies as being particularly important in both demonstrating the ineffectiveness of traditional professional development approaches, and suggesting potential reasons for their lack of impact on teacher and student learning. First, Cohen and Ball (1999) conducted a study examining the influence of traditional professional development activities on California mathematics teachers' attitudes about curriculum changes and their ability to make changes to their classroom instruction. The study involved over 2000 teachers and professional development activities consisted of a two-day workshop and two speakers on in-service days over the course of a school year. Findings from questionnaires and interviews indicated that teachers viewed the professional development activities as ineffective because they "were isolated from the reality of classrooms, were not connected to school goals, and provided no follow-up opportunities" (Cohen & Ball, 1999, p. 16). Given these teacher responses, it was not surprising that "there was no evidence that these one-shot activities had any effect on teachers' classroom practice" (Cohen & Ball, 1999, p. 17). In their conclusion, Cohen and Ball (1999) stated that "this seems typical of professional development today: teachers engage in a variety of short-term activities that fulfill state or local requirements but are rarely deeply rooted in the school curriculum or in thoughtful plans to improve teaching and learning" (p. 38).

In the second study, Supovitz and Turner (2000) examined the influence of two different types of professional development activities on science teachers' attitudes towards inquiry-based instruction and their use of this instruction in the classroom. The study, part of the National Science Foundation's (NSF) Teacher Enhancement Program, involved over 5000 teachers from 24 school districts. One group of teachers experienced traditional professional development activities consisting of four separate one-day workshops held during in-service days throughout the school year. A second group of teachers experienced alternative professional development activities comprised of a six-week summer institute followed by two days each month throughout the year where teachers were granted release time to reflect and collaborate with other teachers participating in the study from other schools. Findings based on survey data indicated that during the year following the professional development activities, teachers experiencing the traditional professional development showed no changes in their attitudes towards inquiry-based teaching, and use of inquiry based instruction, while those teachers experiencing the alternative professional development activities showed significant increases in both their attitudes and teaching practices. Supovitz and Turner (2000) concluded that "professional development opportunities that initiate change require multiple opportunities to learn, practice, and collaborate, and one-shot workshops and seminars do not address the needs of teachers looking for new strategies and instructional methods" (p. 977).

Finally, Michael Garet and his colleagues (2001) conducted a national survey of 3027 mathematics and science teachers to examine the relationship between different types of professional development and self-reported changes in teachers' knowledge, skill, and teaching practices. Traditional professional development activities were compared with "alternative" forms (e.g., teacher study groups and peer coaching) of professional development, and results

based on survey data indicated that teachers viewed traditional professional development activities as having little impact on their knowledge, skills, and classroom teaching. Furthermore, findings revealed three primary reasons why teachers reported traditional methods as ineffective: they focus on general teaching knowledge rather than knowledge and skills for specific disciplines, they provide few opportunities for active learning, and they are rarely connected to school goals. The researchers concluded that "traditional forms of professional development are ineffective because they do not provide teachers with the time, activities, and content necessary for increasing teachers' knowledge and fostering meaningful changes in classroom practice" (Garet et al., 2001, p. 920).

The clear ineffectiveness of traditional professional development methods to improve teacher knowledge, skills, and classroom practices, and enhance student learning, has provided the motivation for extensive research on what constitutes effective professional development. As Borko (2004) has emphasized, "because teacher learning must be at the heart of any effort to improve education in our society, and because conventional professional development is sorely inadequate, we must focus our efforts on determining the characteristics of high quality professional development" (p. 7). Research on the characteristics of professional development activities which impact teacher and student learning follows in the next section.

Characteristics of Effective Professional Development

Recent research reflects a consensus about the core characteristics of effective professional development: (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation (Darling-Hammond et al., 2009; Desimone, 2009; Guskey, 2003; Ingvarson, Meiers & Beavis, 2005). "High-quality" or "effective" teacher professional learning is defined as that which results in improvements in teachers' knowledge and instruction, and

improvements in student learning (Whitcomb, Borko, & Liston, 2009). While the impact on student outcomes is often seen as the most important indicator of the effectiveness of professional development, the influence of professional development on teacher knowledge and classroom instructional practice is also crucial, as these are results which must precede increased learning for students. This section examines each of the five characteristics of effective professional development by discussing the most relevant studies in each area.

Content Focus

Traditionally, designers of teacher professional development activities have emphasized improving general teaching practices, such as cooperative learning or classroom management, separate from distinct academic disciplines (Garet et al., 2001; Hawley & Valli, 1999). They have typically not addressed teachers' knowledge of the subjects they teach or instructional strategies within particular subject areas. Shulman (1986) was one of the first to criticize this neglect, emphasizing that professional development should focus on helping teachers possess deep knowledge of the subjects they teach. He coined the term "pedagogical content knowledge" (Schulman, 1986) to describe the special kind of subject-matter understanding that enables teachers to best support the learning of their students. Teachers with high pedagogical content knowledge "anticipate common misconceptions held by students, know how to lead them into different conceptual understandings, help students see and understand relationships between and among ideas and concepts, and encourage students to apply and transfer knowledge" (Sparks, 2001, p. 98).

Instead of abstract discussions of general teaching methods, researchers have emphasized that effective professional development is intently focused on deepening teachers' subject-area knowledge and developing teachers' pedagogical content knowledge (Blank & de las Alas, 2009;

Hill, Rowan, & Ball, 2005; Posnanski, 2002). Multiple studies have found strong effects of professional development on teaching practices when it focused on developing deep understanding of subject content matter, enhancing teachers' knowledge of how to engage in specific pedagogical skills, and how to teach specific kinds of content to learners (Baniflower, Heck, & Weiss, 2005; Buczynski & Hansen, 2009; Cohen & Hill, 1998; Desimone et al., 2002; Garet et al., 2001; Jeanpierre, Oberhauser, & Freeman, 2005; Kennedy, 1998; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Posnanski, 2002; Saxe, Gearheart, & Nasir, 2001; Supovitz & Turner, 2000).

Kennedy (1998) examined the effect of four different professional development programs, differentiated by the specificity of content and instructional strategies provided to teachers. Over 800 teachers, randomly assigned to one of the four professional development programs, experienced the activities associated with their assigned program over the course of a full school year. Results based on student test scores indicated that "programs whose content focused mainly on teachers' behaviors demonstrated smaller influences on student learning than programs whose content focused on teachers' knowledge of the subject, on the curriculum, or on how students learn the subject" (Kennedy, 1998, p. 18). This seminal work prompted others to test similar hypotheses in subsequent studies.

Saxe, Gearheart, and Nasir (2001) studied two types of support for teacher learning, and concluded that student achievement improved most when teachers were engaged in sustained professional development activities focused on deepening teachers' content knowledge and classroom practices. Teachers from 23 schools (170 total teachers) experienced either traditional professional development workshops or the Integrated Mathematics Assessment (IMA) approach, which engaged teachers in learning the math of the new curriculum as well as

facilitating collaborative discussions around pedagogical content knowledge needed to teach the units. The researchers found that students whose teachers had participated in the IMA program showed significantly greater gains on a test assessing conceptual understanding compared with students of teachers experiencing the traditional workshop.

Several studies from a group of researchers (Birman et al., 2000; Desimone et al., 2002; Garet et al., 2001) assessed the effects of a three year, five state mathematics and science professional development initiative associated with the federally-funded Eisenhower program. The professional development activities involved over 4000 teachers and focused on developing teachers' content knowledge and pedagogical content knowledge. Through learning from discipline experts in special summer institutes, interviewing students about their misconceptions of key concepts, and discussing alternative teaching strategies with university professors and fellow teachers, teachers in all three studies used a greater variety of teaching approaches and problem solving strategies, as measured by self-report surveys and video observations, than teachers experiencing more traditional professional development activities. Taken together, these three studies "illustrate the importance of content-focused professional development for changing practice in ways that ultimately improve student learning" (Desimone et al., 2002, p. 83).

More recently, several research teams (Baniflower, et al., 2005; Jeanpierre, et al., 2005) examined the impact of 130 hours of content-based professional development activities centered on instructional materials used by teachers in the classroom. Funded by The National Science Foundation (NSF), and involving over 18,000 teachers over the course of seven summers, the professional development activities consisted of 6-week summer institutes combined with monthly meetings among program participants during the school year. A key feature of the

program was the inclusion of opportunities for teachers to develop, implement, and receive feedback on new lessons developed during their participation in the summer institute. Results based on survey data indicated that teachers increased their content knowledge, incorporated more inquiry-based teaching strategies in their classrooms, and achieved larger gains in student learning than teachers not experiencing the (NSF) professional development.

Finally, Blank and de las Alas (2009) conducted a meta-analysis of studies on teacher professional development. After screening over 400 articles, 74 met the criteria for inclusion in the analysis. Their results indicated that the most powerful factor in impacting teacher learning, teaching practices, and student learning was whether or not there was "an emphasis on teachers learning specific subject content as well as pedagogical content for how to teach the content to students" (Blank & de las Alas, 2009, p. 27). In summary, "the evidence accumulated over the past decade points to the strong link between activities that focus on subject matter content and how students best learn that content with increases in teacher knowledge, skills, improvements in practice, and student achievement" (Desimone, 2009, p. 184).

Active Learning

A second core feature of effective professional development concerns the opportunities provided for teachers to become actively engaged in meaningful discussion, planning, and practice (Burbank & Kauchak, 2003; James & McCormick, 2008; Webster-Wright, 2009). Active learning, as opposed to the passive learning typical with traditional workshops and speakers, can take at least four distinct forms. One element of active learning is the opportunity for teachers to observe expert teachers, to be observed teaching in their own classroom, and to obtain feedback (Hiebert et al., 2002). A second form of active learning is having the opportunity to practice new approaches, to link the ideas introduced during professional learning

experiences to the teaching context in which teachers work (Johnson, 2007). A third element of active learning is the opportunity to examine and review student work with other teachers to better understand students' assumptions and reasoning (Jeanpierre et al., 2005; Johnson & Marx, 2009). Finally, in addition to opportunities to observe teaching, plan classroom instruction, and examine student work, professional development activities may also involve teachers in developing presentations, leading discussions, and producing written work (Ingvarson et al., 2005).

Researchers have found that professional development is most useful and most effective when it actively engages teachers in learning and provides multiple opportunities for hands-on work that builds their understanding of academic content and how to best teach it to their students (Baniflower et al., 2005; Borko, 2004; Bredeson, 2002; Buczynski & Hansen, 2009; Carpenter, Fennema, Peterson, Chiang, & Loef, 1991; Franke, Carpenter, Levi, & Fennema, 2001; Garet et al., 2001; Ingvarson et al., 2005; Jeanpierre et al., 2005; Johnson, 2007; Penuel et al., 2007; Posnanski, 2002). Indeed, Desimone (2009) argued that "the most powerful professional learning experiences are active learning opportunities embedded in teachers' work where they experience for themselves the learning they want their students to do" (p. 186).

Multiple studies have examined the impact of the Cognitively Guided Instruction (CGI) program on teacher and student learning (Carpenter et al., 1991; Carpenter & Fennema, 1992; Fennema, Carpenter, Franke, Levi, & Jacobs, 1996; Franke et al., 2001). The CGI program, which emphasized active learning activities for math and science teachers, included a 4-week summer institute and regular monthly meetings during the school year. Teachers learned about new teaching strategies, studied content with fellow teachers, developed new lessons and units with program instructors and fellow teachers, and practiced implementing the new lessons and

units with other program participants. Using surveys, observations, and interviews, these researchers found that, in comparison with control group teachers, CGI teachers more often taught problem-solving skills, listened to students' explaining their thinking, expected students to use multiple problem-solving strategies, and had greater knowledge of student thinking (Franke et al., 2001). Furthermore, students of CGI teachers solved a greater variety of problems, exhibited a greater range of problem-solving strategies, and were more confident in their math and science ability than students with non-CGI teachers (Fennema et al., 1996).

Active learning opportunities cause teachers to transform their teaching, rather than simply combine new strategies with old ones. In a study involving over 2000 teachers, Cohen and Hill (2001) found that two active learning approaches were successful in California's statewide reform efforts. The first professional learning activity engaged teachers in learning the new curricular units. Teachers practiced teaching the units to other teachers, followed by opportunities to receive feedback and discuss ways to make their instruction more effective. Teachers experiencing this activity reported higher confidence in the effectiveness of their instruction, and their students showed greater gains in achievement than students of teachers not having the opportunity to practice the reform units (Cohen & Hill, 2001). The second professional learning activity involved teachers assessing student work with discipline experts and other teachers. Instructors guided teachers through conceptual roadblocks students faced in their work, and teachers had opportunities to practice assessing student work with fellow participants. Students of teachers engaged in this activity showed greater gains in student achievement, compared with students having teachers who did not experience this activity. The researchers concluded that "professional development is more effective when it engages teachers

in opportunities to practice, receive feedback on, and experiment with new instructional techniques" (Cohen & Hill, p. 12).

Buczynski and Hansen (2009) examined a professional development program designed to engage 118 elementary school teachers in "defining precisely which concepts and skills they want students to learn and to identify the content most likely to give students trouble" (p. 5). Teachers participated in a 100-hour summer institute during which they actively engaged in developing new units and teaching the new units to fellow participants. Data were gathered from pre/post content exams, surveys, and interviews, and teachers participating in the institute successfully transferred knowledge and skills gained from the summer institute to their classrooms and their students, when compared with students of teachers not attending the institute, exhibited higher achievement.

Finally, Ingvarson et al. (2005) examined the impact of a year-long professional development program on teachers' knowledge and classroom instructional practices. Following a 6-week summer institute on both content and content-specific teaching strategies, the 3250 teachers from 40 schools had multiple opportunities to apply and reflect on their new knowledge and skills during the school year. Teachers planned, taught, and received feedback on new lessons as part of action research teams, and teachers received advice, feedback, and support from discipline-specific coaches as they worked to apply new teaching strategies to their classrooms. These experiences actively engaged teachers in "collaboratively examining student work, analyzing student misconceptions, designing and testing new lessons, and giving and receiving feedback on the effectiveness of instructional practices" (Ingvarson et al., 2005, p. 15). Results based on data collected from surveys showed that compared with teachers not in the program, teachers experiencing these activities enhanced their content knowledge, and exhibited

greater variety in their classroom practices and how they responded to student questions. Researchers concluded that "a significant body of research confirms that effective professional development actively involves teachers in instructional planning, discussion, and consideration of how students best learn the content in question" (Ingvarson et al., 2005, p. 16).

Coherence

The literature also finds that professional development is more effective when professional development activities are part of a coherent program of teacher and school improvement (Hawley & Valli, 1999; Whitcomb et al., 2009). A coherent professional development program is one that "is connected to student needs, teacher needs, school goals, the curriculum of the school, and state standards" (Borko, Elliott, & Uchiyama, 2008, p. 971). Professional development activities for teachers are frequently criticized for "being disconnected from one another and from school, district, and state reforms and policies" (Desimone, 2009, p. 184). Researchers have demonstrated that professional development will have little impact when teachers see a disconnect between what they are guided to do in a professional development activity and what they must do according to school curriculum guides, texts, and assessment practices (Garet et al., 2001; Penuel et al., 2007). Researchers have found that for substantial change in teaching practices to occur, curriculum, assessment, standards, and professional learning activities must be closely linked to connect what teachers learn in professional development with what they can implement in their classrooms and schools (Birman, Desimone, Porter, & Garet, 2000; Bryk, Camburn, & Louis; 1999; Firestone et al., 2005; Garet et al., 2001; Honig & Hatch, 2004; Newmann, Smith, Alensworth, & Bryk, 2001; Penuel et al., 2007; Supovitz, Mayer, & Kahle, 2000; Supovitz & Turner, 2000; Vanderberghe, 2003; Youngs & King, 2002).

An example from Ohio was the National Science Foundation's Discovery science professional development program, which designed a coherent plan intended to link the professional learning of teachers with planned state curricular and assessment changes (Supovitz, Mayer, & Kahle, 2000). After six-week institutes focusing on science content and instruction that were aligned with those outlined in the state standards, over 1000 teachers were given time throughout the school year to attend workshops on new assessment strategies linked with the state standards. In addition, they were provided support and site visits from regional program leaders. Collecting data using pre/post content tests and surveys, researchers found that teachers participating in the program demonstrated improved content knowledge and increased use of instructional and assessment strategies specified by the new standards (Supovitz, Mayer, & Kahle, 2000).

Coherence was one of several professional development characteristics examined by Birman and her colleagues (2000) in their study of several professional development initiatives funded by the federal Eisenhower Professional Development Program. Over the course of a year, 250 science and mathematics teachers experienced collaborative study groups, seminars, and peer coaching. Teacher perceptions of the coherence of their professional development activities were assessed in three ways: the extent to which the activities built on what teachers already knew; the extent to which the content and pedagogy of the activities were aligned with local and state standards, curricula, and assessments; and the extent to which the activities supported teachers in developing sustained collaboration with colleagues working to make similar changes in their classroom teaching practices. Results indicated that "teachers reporting higher professional development activity coherence demonstrated greater changes in classroom

teaching practices and reported greater confidence in their ability to connect their teaching with school and state standards" (Birman et al., 2000, p.23).

Newman and his colleagues (2001) examined the relationship between professional development program coherence and student achievement in Chicago public elementary schools. Over 10,000 Chicago public elementary school teachers completed surveys about professional development program coherence, and the researchers merged these survey data with the Iowa Tests of Basic Skills in Reading and Mathematics for all students in grades two through six in these schools. Researchers then averaged teachers' responses in each school to produce a measure of each school's level of professional development program coherence. Controlling for student socioeconomic variables, the researchers (Newmann et al., 2001) found that schools scoring high in professional development program coherence had better student achievement on the reading and math tests than schools with lower coherence measures, leading them to conclude that "coherence between professional development activities, school policies, and other professional experiences supports increased student learning" (p. 24).

Finally, Firestone and his colleagues (2005) compared the professional development programs of three New Jersey school districts to examine the influence of professional development coherence on teaching practices. Over the course of a year, the professional development coherence of each district was assessed through teacher interviews and surveys distributed to a random sample of teachers in each district, and the teaching practices of district teachers were assessed through interviews and surveys. The researchers found that teachers from the district scoring higher in professional development coherence reported greater confidence in their classroom teaching, and reported using teaching strategies and assessments called for by state standards more frequently than teachers from schools with less coherent professional

development (Firestone et al., 2005). Taken together, the research demonstrated that "professional development is much more effective when it is an integral part of a larger school improvement effort, rather than when activities are isolated, having little to do with other initiatives underway at the school" (Darling-Hammond et al., 2009, p. 6).

Duration

A common criticism of professional development activities is that they are too short and offer limited opportunities for follow-up with teachers (Guskey, 2003; James & McCormick, 2009; Little, 1993). Researchers agree that to make the changes required by educational reforms, teachers need professional development that extends over time and is linked with their classroom teaching, allowing for multiple cycles of practice, feedback, and reflection (Blank & de las Alas, 2009; Garet et al., 2001). Professional development that is of longer duration is more likely to contain the kinds of learning opportunities necessary for teachers to integrate new knowledge into practice (Yoon et al., 2007). For example, longer activities are more likely to provide an opportunity for deep discussion of content, student conceptions and misconceptions, instructional strategies, and assessment strategies. In addition, activities that extend over time are more likely to cause teachers to try out new practices in the classroom and receive feedback on their teaching. Many studies confirm that intellectual and instructional change requires professional learning activities to be of long duration, including both the span of time over which the activity is spread and the number of hours spent in the activity (Baniflower et al., 2005; Bucynski & Hansen, 2009; Corcoran, McVay, & Riordan, 2003; Desimone et al., 2002; Garet et al., 2001; James & McCormick, 2009; Johnson, 2007; Johnson & Marx, 2009; Posnanski, 2002; Supovitz & Turner, 2000; Yoon et al., 2007).

Several researchers examined the influence of sustained professional learning on teachers' attitudes toward inquiry-based instruction and their use of this instruction in the classroom (Corcoran et al., 2003; Supovitz & Turner, 2000). The professional development involved over 5000 teachers and consisted of intensive summer institutes and monthly meetings throughout the school year where participants would gather to reflect on and collaborate with other teachers participating in the experience. In both studies, results based on survey data and interviews indicated that teachers with 80 or more hours of professional development were more likely to use inquiry-based teaching in their classrooms than teachers who had experienced fewer hours (Corcoran et al., 2003; Supovitz & Turner, 2000). Controlling for student socioeconomic factors, they also found that improved student achievement was associated with longer duration of professional development for teachers. Supovitz and Turner (2000) concluded that "effective professional development opportunities that initiate change in teachers and student must be sustained over time to provide multiple opportunities for teachers to learn, practice, and interact" (p. 976).

Johnson (2007) and Johnson and Sparks (2009) studied the influence of a sustained collaborative professional development program called The Model School Initiative on the practices of 115 middle school teachers. Teachers participated in over 120 hours of professional development, consisting of a summer institute and monthly whole day experiences at their own schools. Results based on interviews and classroom observations showed a positive relationship between hours spent in professional development and frequency of classroom time spent using new pedagogical approaches, leading Johnson (2007) to conclude that "while duration of professional learning is not the only variable that matters, there is substantial evidence that

teacher learning, and associated student learning, are associated with the number of professional development hours" (p. 657).

Several recent large-scale surveys have found similar results. Baniflower and his colleagues (2005) surveyed over 18,000 teachers participating in the federally funded Local Systemic Change through Teacher Enhancement Initiative (LSC). Results indicated that teachers who spent more hours in LSC professional development scored significantly higher on measures of attitudes towards standards-based teaching, their own perceptions of pedagogical preparedness, and their perceptions of content preparedness. The researchers also found a positive relationship between teachers' hours spent in professional development and the self-reported frequency of use of LSC instructional materials in their classroom teaching. In their survey of over 10,000 teachers in England, Boyle and his colleagues (2004) also found that longer duration professional development resulted in changes in self-reported teacher attitudes and classroom teaching practices.

Finally, Yoon and his colleagues (2007) analyzed the findings from over 1000 studies and evaluation reports addressing the influence of professional development on student learning and concluded that sustained and intensive professional development was related to teacher and student learning. They summarized the importance of professional development duration by saying that "activities of longer duration have more subject-area content focus, more opportunities for active learning, and more coherence with teachers' other experiences than do shorter activities, and this helps them facilitate changes in teacher attitudes and practices" (Yoon et al., 2007, p. 6).

Collective Participation

Impeded by the traditional model of isolated classrooms and the resulting norms of privacy, U.S. public schools have historically offered few opportunities for collective teacher work (Little, 1993; Lortie, 1975). Therefore, early efforts at developing occasions for teacher collaboration were often ineffective in promoting teacher learning, as both teachers and educational leaders did not have clear images of how teachers could work and learn well together (Bredeson, 2002; Hiebert & Stigler, 2002).

Despite cultural norms of teacher isolation and frustrations associated with attempts at teacher collaboration, interest has been growing in professional development that is designed for groups of teachers from the same school, department, or grade level (Borko et al., 2001; Hiebert et al., 2002). Researchers have identified four potential advantages of professional development designed for groups of teachers (Borko, 2004; Cohen & Ball, 1999; Darling-Hammond et al., 2009; James & McCormick, 2009). First, teachers who work together are more likely to discuss concepts, skills, and problems that arise during their professional development experiences. Second, teachers who are from the same school, department, or grade are likely to share common curricular materials, course offerings, and assessments. Through engaging in collective professional learning, they will be better prepared to integrate what they learn with other aspects of their instructional environment. Third, teachers who share the same students can discuss students' needs across classes and grade levels. Finally, collaborative professional development may help create a shared professional culture, in which teachers in a school develop a common understanding of instructional goals, methods, problems, and solutions (James & McCormick, 2009).

Research on effective professional development emphasizes the importance of collaborative learning environments in schools. Studies have found that when schools create productive working relationships within academic departments or grade levels, across them, or among teachers school-wide, the benefits can include improved classroom instruction, enhanced student learning, and transformed school cultures (Borko et al., 2001; Burbank & Kauchak, 2003; Darling-Hammond et al., 2009; Desimone et al., 2002; Goddard, Goddard, & Tschannen-Moran, 2007; Hollins, McIntyre, DeBose, & Towner, 2004; Ingvarson et al., 2005; James & McCormick, 2009; Little, 2003; Louis, Marks, & Kruse, 1996; Putnam & Borko, 2000).

Effective collaborative professional development can take many forms. In each of these forms, "teachers engage in group processes around a concrete enterprise that results in shared learning" (Darling-Hammond et al., 2009, p, 12). One form, called Critical Friends Groups, involves teachers providing feedback and assistance to one another to support teacher learning and student learning. A study relying on observations and teacher interviews revealed significant changes in teacher practices (Dunne, Nave, & Lewis, 2000). Through participation in the groups, teachers' instruction became more student-centered, with a focus on student mastery as opposed to merely covering the material. Teachers also reported having more opportunities to learn and a greater desire to develop more effective teaching practices than teachers not participating in Critical Friends Groups (Dunne et al., 2000).

A second form of collaborative professional development is the teacher study group. Multiple studies suggest than when teachers research together, analyze student work together, and plan lessons and units together, they support improved teaching practices, and ultimately enhanced student achievement (Chokshi & Fernandez, 2004; Fernandez, 2002; Hollins et al., 2004; Strahan, 2003). For example, several case studies of California schools using teacher

study groups describe schools that have transformed teacher practice through collaborative research, and collaborative development of new lessons and units (Chokshi & Fernandez, 2004; Fernandez, 2002; Fernandez & Chokshi, 2002). Teachers used what they learned in their study groups to improve assessment practices, raise expectations for student learning, and create curriculum that was relevant and engaging. One researcher (Fernandez, 2002) concluded that "this collaborative teacher work led to observed increases in student achievement in mathematics and reading" (p. 399).

Action research conducted in groups represents another form of collaborative professional development. Collaborative action research involves small groups of teachers designing, implementing, and evaluating research projects conducted with their students in their classrooms (Zepeda, 2008). In a year-long case study of action research by teachers at a school in Utah, Burbank and Kauchak (2003) found that action research resulted in changed teacher practices, increased teacher confidence, and improvements in student achievement. Several other studies investigating action research have found similar results (Hollins et al., 2004; Phillips, 2003; Ross, Rolheiser & Hogaboam, 1999).

As part of and in addition to these formal collaborative teacher learning opportunities, the literature increasingly describes how teachers learn by working with their colleagues in professional learning communities (Vescio, Ross, & Adams, 2007; Wells & Feun, 2007; Wood, 2008). Professional learning communities are characterized by shared values, reflective dialogue, mutual trust and respect, collaboration and support, and an intense focus on student learning (Hord, 1997; McLaughlin & Talbert, 2001; Wayne et al., 2008). In order to understand the dynamics that allow effective collaboration to occur, scholars have conducted many case studies of teacher professional learning communities to determine if and how they influence

teacher development (Achinstein, 2002; Hollins et al., 2004; Horn, 2005; Little, 2003; Newmann & Wehlage, 1997; Vescio et al., 2007; Wells & Feun, 2007). Results from these studies provide evidence that "professional learning communities impact teacher learning, classroom teaching practices, and are associated with gains in student achievement" (Borko, 2004, p. 6). Furthermore, they have been shown to enhance teacher perceptions of their classroom teaching, the teaching of their colleagues, and the culture of their schools (Caskey, 2007; Giles & Hargreaves, 2007). Because several studies have reported professional learning communities that were not associated with positive outcomes (Scribner, 1999; Scribner, Hager, & Warne, 2002), and others have discussed the many challenges they have faced to achieve the desired outcomes (Fullan, 2006; Lavie, 2006), additional research is needed to examine how professional learning communities form, how they operate, and how educational leaders can use them as levers to promote the learning of teachers and students.

Teachers in this country have historically exhibited a strong individualistic ethos, largely due to the built-in privacy and isolation of their daily work as it has been organized in most U.S. schools. However, this is beginning to change as research builds demonstrating the power of collaborative teacher professional development to impact teacher and student learning. In their recent review of research on effective professional development, Darling-Hammond and her colleagues (2009) emphasized this by concluding that "a consensus exists that for professional development to significantly impact classroom instruction and student learning, it must be embedded into the daily work of teachers and must be conducted in the context of teachers working collaboratively with one another" (2009, p. 10).

The Status of Professional Learning Opportunities in U.S. Public Schools

A growing body of research on effective teacher professional learning points to a new conceptualization of teacher professional development; one based on data about the specific experiences which appear to build teacher knowledge and skills and generate transformations in classroom instruction resulting in improved student learning. The national focus on professional development being a key to improving schools, combined with research identifying the essential characteristics of effective teacher professional learning, has raised expectations that actual professional development practices in U.S. public schools should be approaching these quality guidelines. However, several national studies (Birman et al., 2007; Blank & de las Alas, 2009; Darling-Hammond et al., 2009; Garet et al., 2001) have demonstrated that professional development opportunities in American schools have changed little in recent years. Professional development opportunities continue to consist primarily of ineffective workshops, conferences, and speakers (Blank et al., 2007). Things are quite different in many other countries, with characteristics of effective professional learning identified in the research being commonly available in nations ranked at the top of the PISA (Programme for International Student Assessment) and TIMSS (Third International Math and Science Study) international assessment programs (Darling-Hammond et al., 2009).

In a national sample of 10,000 U.S. teachers, 92 percent reported participating in some form of professional development, but this learning was not focused on content knowledge and was of short duration (Darling-Hammond et al., 2009). Just over half (53 percent) of American teachers were engaged in learning opportunities focused on the content they teach, but this learning was not intensive. Most teachers (63 percent) received fewer than two days (16 hours) of professional development on the content they teach during the previous 12 months, and only

20 percent of teachers reported that they had received 33 hours or more of content-specific professional development in the previous year (Darling-Hammond et al., 2009). Content learning opportunities were less common for elementary school teachers, with only 18 percent (compared to 30 percent for high school teachers) receiving 33 or more hours of content-specific professional development in the previous year (Darling-Hammond et al., 2009). In a study with 600 mathematics teachers, Birman and colleagues (2007) found that teachers averaged 8 hours of professional development on how to teach mathematics and 5 hours of study on mathematics content during the school year. Fewer than 10 percent of the teachers experienced more than 20 hours of professional development on mathematics content or pedagogy during the year. Even the federally supported Eisenhower professional development programs (Desimone et al., 2002; Garet et al., 2001), which has been touted as exhibiting the characteristics of effective professional learning, had an average of only 25 hours of learning opportunities per teacher over the course of one year.

As these surveys indicate, the intensity and duration of professional development offered to U.S. teachers is not at the level that research suggests is required to have a significant impact on classroom instruction and student learning. Very few teachers have the chance to study any aspect of their teaching for more than two days, and this does not meet the threshold needed to produce strong effects on practice or student learning. As this literature review indicated in an earlier section, research suggests that professional development of 14 hours or less per year has little or no influence on student learning while longer-duration programs show significant positive effects on teacher and student learning (Baniflower et al., 2005; Supovitz & Turner, 2000; Yoon et al., 2007).

Findings on teacher collaboration have been equally disappointing, with less than half (40 percent) of teachers reporting that they regularly collaborated with other teachers on issues of instruction (Darling-Hammond et al., 2009), and even less (17 percent) reporting that there was collaborative effort at their school to coordinate the content of courses within and across grade levels. Furthermore, teachers reported having little input into school decisions regarding professional development opportunities, and over half (62%) reported that professional development opportunities rarely addressed what they needed to improve their classroom instruction. These findings suggest that the types of job-embedded collaborative learning that is important in promoting instructional improvement and student achievement is not a common feature of professional development in the majority of schools.

In addition to demonstrating that professional learning opportunities for U.S. teachers do not meet the standards of effective professional development, recent national studies have also shown differences between the professional learning opportunities of U.S. elementary school teachers and U.S. high school teachers (Blank & de las Alas, 2009; Darling-Hammond et al., 2009). For example, content learning opportunities were more rare for elementary school teachers, with only 18 percent (compared to 30 percent for high school teachers) receiving 33 or more hours of content-specific professional development in the previous year (Darling-Hammond et al., 2009). Findings on teacher collaboration and active learning were reversed, with only 26 percent of high school teachers (compared to 54 percent of elementary school teachers) reporting that they regularly collaborated with other teachers on issues of instruction (Darling-Hammond et al., 2009), and only 22 percent of high school teachers (compared to 48 percent of elementary teachers) indicated that they regularly were actively engaged in professional development activities.

Given the findings showing that professional development in U.S. schools is typically of short duration, lacks focus on content knowledge, is disconnected from teacher needs, and is rarely collaborative, it is not surprising that less than half (41 percent) of teachers rated their professional development as useful. These national studies have raised awareness and heightened concern about the gap between effective professional development characteristics and current teacher development opportunities in American public schools. With this information available, attention can now shift to bringing actual practices in line with best practices.

Research efforts are moving from questions about *what* is happening, to *why* it is happening and *how* it can be changed. Researchers suggest that four organizational factors may be hindering efforts to provide U.S. public school teachers the high-quality professional learning opportunities enjoyed by teachers in many other nations (Blank, de las Alas, & Smith, 2008; Darling-Hammond et al., 2009; Fullan, 2006; Guskey, 2009). First, school and district culture are not yet characterized by norms of collaboration, collegiality, and experimentation "which are present in most high-performing countries and promote teachers' continuous learning" (Darling-Hammond et al., 2009, p. 25). Second, U.S. public school teachers are not as actively involved in selecting, designing, and supporting professional development activities as their international counterparts (Darling-Hammond et al., 2009). Third, U.S. public school teachers have significantly less time for professional learning and collaboration built into teachers' work hours. (Blank et al., 2008; Darling-Hammond et al., 2009). Fourth, U.S. public school teachers are not as involved in decisions regarding curriculum and instructional practices which "are important in building commitment to continuous learning and school improvement" (Darling-Hammond et al., 2009, p. 27).

The transition from "*what*" questions to "*why*" and "*how*" questions is leading some researchers and policymakers to be optimistic about the future of professional development in U.S. schools. As Blank and de las Alas (2009) emphasized, "with greater clarity and understanding about the details of effective teacher learning, growing understanding about factors influencing its successful implementation, and evidence about current professional development in our schools, we are better prepared to make significant changes in how teachers learn and teach, and what our students achieve" (p. 29).

The Independent School Context

An independent school is a school which is not dependent upon national or local government for financing its operations, is not reliant upon taxpayer contributions, and is governed by an independently elected board of trustees. It is funded by a combination of tuition charges, gifts, and in some cases the investment yield of an endowment. Independent schools can have a religious affiliation, but the more precise usage of the term excludes parochial and other private schools if there is a financial dependence upon, or governance subordinate to, outside organizations.

There are approximately 115,000 schools in the United States, and 28,000 of them, or about 25 percent, are private schools (Snyder, Dillow, & Hoffman, 2008). Of these private schools, 1,500 are independent schools, and 1215 of these independent schools belong to the NAIS (Snyder et al., 2008). Of the over 50 million school children in the U.S., about 6 million, or about 11 percent, attend private schools, and approximately 500,000 attend NAIS member independent schools (Snyder et al., 2008).

Training in instructional methods, beyond subject area expertise and a pedigree from a top-tier university, has not customarily been expected of independent school teachers. Added to

this has been the appeal of "academic freedom", the mantra among many teachers in independent schools where teacher licensing, prescribed curricula, lesson planning, and other perceived bureaucratic confinements have not been the norm. Therefore, perhaps even more than public schools, independent schools have historically been dominated by the egg-crate culture in which teachers are not only isolated from one another in separate classrooms, but they are also insulated from the opportunity to be professionally observed and from the need to demonstrate their own learning and growth (Dronkers & Robert, 2007; Trickett, Castro, Trickett, & Schaffner, 1982; Zepeda, 2008).

As with public schools, the primary form of professional development available for independent school teachers has historically been "in-service training" consisting of workshops, speakers, short-term courses, and conferences (Bassett, 2006; Jorgenson, 2006). However, while improving professional development practices in U.S. public schools has become a priority for educators, policymakers, and researchers, professional development practices in U.S. independent schools have gone unexamined. There is virtually no existing research on professional development practices in independent schools and "there is no outcry from politicians and the public calling for improved professional learning opportunities for independent school teachers" (Wilson, 2006, p. 2).

Patrick Bassett, president of NAIS, and other independent school leaders have begun to emphasize the need for greater attention to be given to professional learning in independent schools (Bassett, 2007, Duffy, Mattingly, & Randolph, 2006; Jorgenson, 2006). As Duffy and her colleagues (2006) state, "we must embrace change and must face the fact that an effective professional development program is not based primarily on workshops, speakers, and conferences" (p. 2). Bassett has been calling for changes in the professional development

practices of independent schools, arguing that teacher learning opportunities "should be built into the daily work of teachers and involve teachers working collaboratively to discuss and solve problems directly related to their instruction and the students in their school" (2007, p. 2).

Recent studies by both the National Center for Education Statistics (2007) and the Higher Education Research Institute (2008) demonstrated that U.S. independent school students have higher SAT and ACT test scores, and higher National Assessment of Education Progress (NAEP) scores, than their U.S. public school counterparts. While these results could lead one to question the need for improved professional learning in U.S. independent schools, data comparing U.S. independent school students with students in other countries leads to a different conclusion. For example, data from the Program in International Student Assessment (National Center for Education Statistics, 2006) supports Bassett's calls for reform in the professional development practices of U.S. independent schools. Although U.S. independent school students scored significantly higher on these math and science assessments than U.S. public school students, their mean scores on these tests were slightly below the average for international students. Furthermore, of the 30 countries participating in the PISA testing, U.S. independent school students' average scores placed them outside of the top ten with an eleventh place finish.

However, before U.S. independent schools can work to achieve the professional development reforms called for by Bassett and others, it is necessary to obtain accurate information about the current status of teacher learning in NAIS schools. *What* is happening regarding professional development in U.S. independent schools must be determined before examining *why* it is happening and *how* it can be changed. A large scale study, analogous to the recent research on teacher development in U.S. public schools (Darling-Hammond et al., 2009), on current professional development practices in American independent schools is needed, and

this problem is addressed by the present study. Independent school leaders across the United States will be able to use this information to evaluate their professional development programs and begin the process of transforming the learning opportunities they make available for their teachers.

Summary

We live in an age of educational reform, with countries around the world seeking to transform schools and teaching. Many factors contribute to achieving substantive change, but the changes in classroom practices called for by the reform programs ultimately rely on teachers (Borko, 2004). Efforts to enhance student learning can only succeed by creating opportunities for teachers to improve their instruction and by building the capacity of schools to advance teacher learning (Darling-Hammond, 2005).

Professional development available to teachers has historically been dominated by workshops, speakers, and conferences that offer teachers new information on a particular aspect of their work (Webster-Wright, 2009). Educational researchers and school leaders have criticized such approaches for many years, concluding they are fragmented, disconnected from teacher and school needs, and "ineffective in bringing about their intended improvements in teaching and learning" (Guskey, 1986, p.44). Johnson (2007) has commented that "traditional methods of teacher professional development often include valuable information but they are not sustained over time and are disconnected from the daily realities of teachers working with students" (p. 211).

The clear inadequacy of conventional professional development methods fueled extensive research efforts to determine the fundamental characteristics of effective professional development. This research is leading to greater understanding about the essential characteristics

of professional development that are critical to improving teacher knowledge and skills, and which hold promise for increasing student achievement. Key characteristics of effective professional development include collaborative work groups, a focus on pedagogical content knowledge, alignment with school improvement goals, being sustained over time, using active methods of teacher learning, and being connected to classroom practice (Desimone, 2009; Guskey, 2003).

Most U.S. public school teachers do not currently have access to the types of effective professional learning opportunities needed to improve their instruction (Darling-Hammond et al., 2009), but no research exists on professional development practices in U.S independent schools. For U.S. independent schools to begin to change their professional development practices, and thereby improve teacher instruction and student learning, information about the current status of teacher learning opportunities in independent schools must be obtained. To address this problem, the present study was conducted to assess the extent to which professional development opportunities in independent schools are aligned with what research says about effective professional development practices.

CHAPTER III. METHODS

Introduction

A significant body of research is now available on what constitutes high-quality professional development, and there is a growing consensus that improved teacher professional development is essential to transforming American schools. Unfortunately, despite expectations that actual professional development practices in U.S. public schools should be approaching many of these quality guidelines, a recent national study (Darling-Hammond et al., 2009) has demonstrated that professional development opportunities in U.S. public schools fall short of meeting standards for effective professional development.

While improving professional development practices in U.S. public schools has become a priority for educators, policymakers, and researchers, professional development practices in U.S. independent schools have gone unexamined. The purpose of this study was to address this research gap by assessing the extent to which current professional development opportunities in independent schools are aligned with research-based best practices of teacher professional learning. With accurate information about the nature of professional development opportunities available to independent school teachers across the United States, independent school leaders can begin to both evaluate the needs of the systems in which teachers learn and work, and consider how teachers' learning opportunities can be further supported.

I used a cross-sectional descriptive research methodology, developing a survey to identify current professional learning opportunities for teachers in U.S. independent schools. I selected

this method because it is a means to describe systematically and accurately the characteristics of an existing phenomenon (Isaac & Michael, 1995).

This chapter outlines in detail the research methodology used in this study. The first section states the research questions for this study. The following section describes the participants in the study and discusses the research instrument used in the study. The remaining sections discuss data collection procedures, data analysis procedures, and the limitations of the study.

Research Questions

The following research questions framed this study:

1. What factors in the *Independent School Teacher Development Inventory* (ISTDI) are identified through exploratory factor analysis procedures? Are factors corresponding to traditional professional development, and the five features of effective professional development (content, duration, collaboration, active learning, and coherence), established using confirmatory factor analysis?

2. To what extent are professional development practices in U.S. independent schools consistent with research-based principles of effective professional development?

3. To what extent do differences exist in professional development practices in U.S. independent schools across divisions (elementary schools, middle schools, and high schools)?

4. To what extent do differences exist in professional development practices in U.S. independent schools across schools with different professional development budget sizes?

Participants

I obtained permission to conduct a research study with National Association of Independent Schools (NAIS) member schools from NAIS President Pat Bassett and NAIS Chief

Operating Officer Donna Orem. I selected a target population of all elementary school, middle school, and high school division heads (NAIS terminology for principals) in NAIS member schools. This resulted in sending surveys to all 3422 NAIS division heads, 1264 of them being division heads of high schools, 1049 division heads of middle schools, and 1109 division heads of elementary schools.

Instrument Development

Description of the Instrument

I designed a survey to collect information about the current status of teacher learning opportunities in NAIS schools. The target population was independent school division heads rather than independent school teachers because division heads have greater knowledge about all of the professional development opportunities in a school than individual teachers. The instrument designed was a two-part questionnaire called the *Independent School Teacher Development Inventory* (see Appendix A). The Auburn University Institutional Review Board for the Protection of Human Subjects in Research granted permission to collect data (see Appendix B).

Section I of the survey consisted of 40 Likert-type questions with a five-point Likert-type scale. The ordinal scale consisted of the following: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, and (5) Always. No clear agreement has emerged on the optimal number of response categories for reliability and validity, with some researchers arguing for seven categories (Cicchetti, Showalter, & Tyler, 1985; McKelvie, 1978) and others preferring five categories (Lissitz & Green, 1975; Neumann, 1979). In practice, researchers (Bandalos & Enders, 1996; Weng, 2004) generally agree that when determining the number of response categories for a specific study it is important that "the number of response options be such that it

does not exceed the discriminative capacity of the subjects" (Lozano, Garcia-Cueto, Muniz, 2008, p. 78). I chose five options for the instrument in this study based on feedback during initial test item development which indicated that respondents could more easily discriminate among five categories than seven categories.

Section II of the survey collected demographic information about the division heads and their schools such as type of division head, years of experience as a division head, type of school, size of school, and location of the school. The aim of this section was to collect information that would help clarify potential connections between specific demographic variables and current opportunities for professional learning in independent schools.

Messick (1994) stated that when developing surveys "the designer of a survey instrument must defend the content of the instrument based on the questions of the research and previous trends identified in the literature" (1994, p. 15). Following this recommendation, I developed the questions in section I to address the specific research questions of this study, and drew upon common themes identified in review of the professional development literature to develop specific survey items.

More specifically, the questions of the survey followed the six areas of teacher professional learning identified in the literature review. First, six questions collected information about conventional professional development methods (workshops, conferences, short-term courses) shown to be ineffective by researchers. Other items collected information about the five core characteristics of effective professional development specified by researchers: (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation. Six items collected information about the content focus of professional learning opportunities, eight collected information about the active learning emphasis of professional development activities,

eight collected data about the coherence of professional learning activities, seven collected information about the extent to which professional development activities included opportunities for collective participation, and five questions collected data about the duration of professional learning activities.

I distributed the surveys using QuestionPro, a commercial electronic survey service. I chose electronic distribution over traditional mail distribution for three reasons. First, recent studies have found that mail distribution no longer produces significantly higher response rates than electronic distribution (Ammentorp, Rasmussen, Norgaard, Kirketerp, & Kofoed, 2007; Dixon & Turner, 2007). Second, the large number of surveys (3422) made electronic distribution more efficient in terms of time and finances. Finally, feedback from independent school leaders and NAIS personnel during survey development revealed a preference in the target population for electronic distribution over mail distribution.

Content Validity

I established appropriateness of item content in four ways, providing evidence that survey results can be interpreted with an acceptable level of validity. First, a group of ten expert educational researchers in the field of teacher professional learning provided feedback on the quality of survey items. Expert judgment and feedback related to the design of the instrument is an essential part of establishing content validity (Lissitz & Samuelson, 2007; Messick, 1994). I selected individuals based on how frequently their research was cited in the "characteristics of effective professional development" section of the literature review of this study. I sent the questionnaire electronically to the ten most frequently cited researchers and asked them to review the items on the questionnaire and make suggestions and recommendations. After reviewing the four research questions and the objectives of the questionnaire, seven of the ten

researchers provided feedback on the questionnaire, resulting in two questions being omitted, two new questions being generated, and eight questions being revised to improve clarity.

The second method of documenting item appropriateness followed revisions made in response to expert researcher comments. The questionnaire was sent electronically to an expert panel of ten independent school educators, all of them having over 20 years of experience working in independent schools. The ten educators included the president, vice-president, and research director for NAIS, and seven current independent school heads. After reviewing the four research questions and the objectives of the questionnaire, nine of the ten educators provided feedback, resulting in several new demographic areas being added (related to school endowment and division size) and six questions being revised to improve clarity.

As both a third indication of item appropriateness, and as a method of detecting errors in the survey's form and presentation, the revised survey was pilot-tested with a group of 20 former independent school division heads. Pilot testing is an effective way of detecting errors of content, form, and clarity by giving the survey to respondents similar to ones who will be included in the actual study (Sireci, 2007). Pilot testing was conducted after revisions resulting from the feedback of both the expert researchers and independent school educators. Current division heads were excluded from pilot testing because they were part of the target population for the actual study. The 20 former division heads were identified through the NAIS national office. These 20 individuals were sent the survey electronically and were asked to complete the survey and provide feedback regarding the length of the survey, the design of the survey, and the clarity of the questions. Fifteen of the former division heads provided feedback, resulting in confirmation of appropriate survey length (average completion time under 15 minutes), and modification of three questions to improve clarity.

Fourth, the 15 former division heads that provided feedback were asked to participate in cognitive interviews to detect unanticipated misinterpretations of the survey questions. Cognitive interviews involve interviewing potential respondents to "learn how specific questions are interpreted so that higher quality data can be gathered and the validity and reliability of surveys can be improved" (Desimone & Le Floch, 2004, p. 3). Twelve of the fifteen former division heads agreed to participate in the cognitive interviews, resulting in modification of four questions to improve clarity.

When developing a new survey instrument, it is important to examine if "an instrument is consistent with the definition of the construct it is meant to be tapping" (Pedhazur & Schmelkin, 1991, p. 69). Although establishing the appropriateness of item content is an important part of doing this, researchers emphasize that factor analysis is extremely valuable in "determining whether an instrument measures one dimension of a construct or multiple dimensions of a concept" (Pedhazur & Schmelkin, 1991, p. 591) and in "testing whether or not an instrument fits the theoretical model guiding its construction" (Tabachnick & Fidell, 2007, p. 233).

Because the questionnaire reflected the six characteristics of professional development identified in the literature, it was expected that survey items within each of the six areas would be positively correlated with one another, forming six dimensions or factors. For example, because six items were designed to collect information on traditional professional development practices, results were expected to show that scores on these six items would be strongly, positively correlated with one another. Similarly, it was expected that scores on items within each of the five core areas of effective professional development would also be strongly, positively correlated with one another. To ascertain whether survey results would separate into these six areas or factors, both an exploratory factor analysis and a confirmatory factor analysis

were planned, as the expected large number of responses would allow for randomly splitting the sample. Simply put, exploratory factor analysis is concerned with investigating how many factors emerge among the items on an instrument, while confirmatory factor analysis is concerned with testing a hypothesis about the specific number of factors making up an instrument (Pedhazur & Schmelkin, 1991).

Reliability

Reliability refers to the extent to which scores from an instrument are repeatable and consistent (Fowler, 1993). I documented the reliability of the survey by using the entire sample and calculating Cronbach's alpha. Cronbach's alpha measures the internal consistency reliability, the extent to which survey items are related to one another, and is often used by researchers collecting survey data with Likert-type scales (Shannon & Davenport, 2001). Alpha coefficients range in value from 0 to 1, with higher scores indicating greater reliability. Researchers (Jacobs & Razivieh; Santos, 1999) generally regard reliability coefficients above 0.7 to be acceptable.

Data Collection Procedures

On April 19, 2010 I sent a letter via e-mail to each of the 3422 NAIS division heads informing them that a survey (see Appendix C) about professional learning opportunities in NAIS schools would arrive via e-mail the following week. Research has demonstrated that advance letters of this type increase response rates (Dillman, 2000). I e-mailed cover letters (see Appendix D), with links to the survey, on April 26, 2010. The letters stated the objectives of the survey, emphasized that their participation would be anonymous, and affirmed that the recipient's participation was imperative to the success of the survey. Because reminders have a powerful influence on response rates (Dillman, 1978; Sierles, 2003), I sent two waves of

reminder e-mails to the target population. These reminders were sent at one and three week intervals after the initial distribution, a schedule recommended by several researchers (Fischbacher, Chappel, & Edwards, 2000; Schleyer & Forrest, 2000).

Data Analysis

Using the computer program Statistical Package for the Social Sciences (SPSS) 18.0, and the computer program AMOS, data was organized and analyzed to address the four research questions that guided this study.

Question 1: To address both parts of research question one the researcher randomly divided the respondents into two halves. What factors in the *Independent School Teacher Development Inventory* are identified through exploratory factor analysis procedures? Researchers use factor analysis to analyze survey data to determine if specific survey items are highly correlated with other survey items, an outcome indicating that they may measure a similar dimension or factor.

I used principal axis factor analysis procedures, with an oblique rotation due to the expectation that the underlying factors were related to each other, on the data from one half of the respondents to specify the number of factors measured by the *Independent School Teacher Development Inventory.* I used confirmatory factor analysis procedures on the data from the second half of the respondents to confirm that the number and composition of the factors identified in the exploratory factor analysis provided the best fit to the data from the surveys.

Question 2: To what extent are professional development practices in U.S. independent schools consistent with research-based principles of effective professional development practices? I used descriptive statistics such as percentages, means, and standard deviations to analyze factor scale scores for section I, and individual item scores in section I. I used these

statistics to assess the extent to which actual professional development practices of independent schools are consistent with research-based principles of effective professional development, as well as compare the relative prevalence of one type of professional development opportunity with another one.

Question 3: Are there differences in professional development practices in U.S. independent schools across divisions (elementary schools, middle school and high schools)? I used descriptive statistics such as percentages, means, and standard deviations to analyze factor scale scores for section I, and individual item scores in section I, for the three division types. In addition, to determine whether statistically significant differences existed between the three division types on factor scale scores, I conducted multiple one-way ANOVAs.

Question 4: Are there differences in professional development practices in U.S. independent schools across professional development budget sizes? I used descriptive statistics such as percentages, means, and standard deviations to analyze factor scale scores for section I, and individual item scores in section I, for the five budget sizes. In addition, to determine whether statistically significant differences existed between the five budget sizes on factor scale scores, I conducted multiple one-way ANOVAs.

Limitations

One major limitation of this study, and all survey research (Couper, Traugott, & Lamias, 2001), is that the participants may have responded to questions by giving the answers perceived by them to be those desired by the researcher, a phenomenon known as social desirability responding (van de Mortel, 2008). Making the survey responses in this study anonymous likely decreased this source of error (Czaja & Blair, 2004), but researchers have demonstrated that

participants in survey research often make their responses socially desirable even when they are assured anonymity (Fricker & Schonlau, 2002).

A second significant limitation of this study is that school administrators, the target population for this study, may view professional development opportunities differently than the teachers who directly experience the professional development. Additional studies using the ISTDI with independent school teachers will be needed to determine if, and to what extent, differences exist between independent school administrators and teachers

A third limitation of this study is that despite efforts to clarify survey questions, there remains ambiguity regarding the meaning of terms and questions, and the meaning of specific categories. For example, the term "teacher study group" and the category "sometimes" will mean different things to different people.

Summary

The purpose of this study was to assess the extent to which current professional development opportunities in independent schools are aligned with what research says about effective professional development practices. I designed a survey called the *Independent School Teacher Development Inventory* to collect data about professional development practices in independent schools. The items of the survey reflected the common themes identified in the review of the literature on teacher professional learning. I established the content validity of the instrument through two rounds of expert review and a field test with individuals similar to the target population. Internal consistency reliability measures supported the reliability of the instrument. I investigated the dimensions underlying the 40 items of the survey instrument through exploratory and confirmatory procedures.

I electronically sent the final version of the instrument to all 3422 NAIS division heads (principals). Participants completed the surveys electronically and the data was electronically sent to the researcher by QuestionPro. I analyzed all data using SPSS and AMOS, emphasizing procedures aligned with the four research questions guiding the study.

CHAPTER IV. MANUSCRIPT 1: THE PSYCHOMETRIC PROPERTIES OF THE INDEPENDENT SCHOOL TEACHER DEVELOPMENT INVENTORY

Abstract

The aim of the present study was to develop and examine the initial psychometrics of an instrument, the Independent School Teacher Development Inventory (ISTDI), designed to measure the professional learning opportunities available in U.S. independent schools. Items on the ISTDI were derived from a review of relevant literature and were intended to gather information on how frequently U.S. independent schools employ traditional professional development methods and the five areas of more effective professional development (content focus, active learning, collaboration, coherence, and duration). The final form of the ISTDI was sent electronically to 3422 independent school administrators and 2474 returned completed surveys. Exploratory factor analysis performed on a randomly assigned half of the sample (n =1237) suggested that the ISTDI was comprised of five factors: traditional, content, coherence, duration, and active learning/collaboration. Confirmatory factor analysis was performed on the second half of the sample and provided additional support for a five factor structure of the ISTDI. Reliability coefficients for each of the five factors were above .90. This study provides promising support for a five-factor instrument that assesses professional development practices in independent schools. While the ISTDI was developed for use with independent school administrators, further research is warranted to determine if it may be relevant for use with teachers and administrators in both public and independent schools.

Introduction

Educational reform movements are emphasizing that teacher professional learning is a key component of change and an important link between standards and improved student learning. As students are expected to learn more complex material and new analytical skills in preparation for further education and work in the age of information and globalization, teachers must learn to teach in ways that encourage higher level thinking and performance. A new kind of teaching is needed, conducted by teachers "who understand learning as well as teaching, who can address students' needs as well as the demands of their disciplines, and who can create bridges between students' experiences and curriculum goals" (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009, p. 1).

There are many ways to improve the quality and performance of our nation's teachers and many are being examined. States and districts have restructured the staffs at many failing schools (Hochberg & Desimone, 2010). They are working to get better talent in classrooms by recruiting career changers and new graduates with deep content knowledge and a passion to teach (Rothstein, 2010). They are changing their personnel departments, launching new teaching academies, and working to more carefully choose who will teach and in what schools (Angrist & Guryan, 2008). However, these efforts, as important as they are, influence only a small portion of teachers and do not adequately provide what is needed. To bolster the educational workforce, we must do more and better with the teachers currently in our schools. The success of current reform efforts is dependent upon creating opportunities for teachers' continual learning and providing sufficient professional development resources to support these opportunities (Buczynski & Hansen, 2009; Guskey, 2002). This realization has led policymakers and educators to make high-quality professional development opportunities for teachers a priority.

Although improving professional development practices in U.S. public schools has become a focus for policymakers, educators, and researchers, there has been no call from politicians and the public for improved professional learning opportunities for independent school teachers, and there has been no research on the professional learning opportunities available to independent school teachers. Nevertheless, independent schools, those schools not dependent upon government funding for their operations, are beginning to emphasize the need for improved professional learning opportunities for their teachers. Like their public school counterparts, independent school leaders and policymakers are calling for high-quality professional learning experiences for teachers and are placing professional development at the center of efforts to improve the teaching and learning in their schools (Bassett, 2006).

Before U.S. independent schools can align their teacher learning opportunities with the new benchmarks for effective professional development, details about the current state of teacher learning opportunities in independent schools is needed. To address this problem, a national study was conducted to assess the extent to which professional development opportunities in independent schools are consistent with the new standards of effective professional development. This paper discusses the development and psychometric properties of the survey, The Independent School Teacher Development Inventory (ISTDI), used in that study.

Characteristics of Effective Professional Development

Unfortunately, professional learning as traditionally conceived by school leaders is deeply flawed. For years the only form of professional development available to teachers was staff development or in-service training, usually consisting of workshops, speakers, or short-term courses (Webster-Wright, 2009). Researchers have consistently demonstrated the ineffectiveness of conventional one-shot professional development approaches (Guskey, 1986;

Ingvarson, Meiers, & Beavis, 2005; Supovitz & Turner, 2000), concluding that they have little impact on teacher knowledge, instructional practice, or student achievement (Desimone, 2009). Desimone (2009) has commented that "it is a wonder that workshops and speakers have been the core of professional development programs for so long despite dozens of studies demonstrating their ineffectiveness" (p. 188).

Motivated by the clear ineffectiveness of conventional professional development methods, researchers have been working to determine the essential characteristics of professional development that are critical to increasing teacher knowledge and skills, and that can boost student achievement. This research has led to considerable agreement that the key characteristics of effective professional development include collaborative work groups, a focus on pedagogical content knowledge, alignment with school improvement goals, implementation over time, and the use of active methods of teacher learning (Desimone, 2009; Guskey, 2003).

Pedagogical Content Focus

Teachers with high pedagogical content knowledge "anticipate common misconceptions held by students, know how to lead them into different conceptual understandings, help students see and understand relationships between and among ideas and concepts, and encourage students to apply and transfer knowledge" (Sparks, 2001, p. 98). Multiple studies have found strong effects of professional development on teaching practices when focused on developing deep understanding of subject content matter, enhancing teachers' knowledge of how to engage in specific pedagogical skills, and how to teach specific kinds of content to learners (Baniflower, Heck, & Weiss, 2005; Buczynski & Hansen, 2009; Jeanpierre, Oberhauser, & Freeman, 2005; Supovitz & Turner, 2000).

Active Learning

A second core feature of effective professional development concerns the opportunities provided by the professional development activity for teachers to become actively engaged in meaningful discussion, planning, and practice (Burbank & Kauchak, 2003; James & McCormick, 2008; Webster-Wright, 2009). Active learning, as opposed to the passive learning typical with traditional workshops and speakers, can take at least four distinct forms: (a) observation of the instructional practices of master teachers; (b) teachers practicing new approaches under simulated conditions; (c) teachers planning lessons and examining student work with colleagues; and (d) teachers developing presentations and essays on new approaches to teaching and learning. Researchers have found that professional development is most valuable and most effective when it actively engages teachers in learning and provides opportunities for hands-on work that builds their knowledge of academic content and how to teach it to their students (Borko, 2004; Bredeson, 2002; Buczynski & Hansen, 2009; Franke, Carpenter, Levi, & Fennema, 2001; Johnson, 2007; Posnanski, 2002).

Duration

There is growing consensus that to make the changes required by reforms, teachers need professional development that extends over time and is interactive with their classroom teaching, allowing for multiple cycles of practice, feedback, and reflection (Blank & de las Alas, 2009). Professional development that is of longer duration is more likely to contain the kinds of learning opportunities necessary for teachers to integrate new knowledge into practice (Yoon et al., 2007). For example, longer activities are more likely to provide an opportunity for in-depth discussion of content, student conceptions and misconceptions, and pedagogical strategies. In addition, activities that extend over time are more likely to allow teachers to try out new practices in the

classroom and obtain feedback on their teaching. Many studies confirm that intellectual and pedagogical change requires professional development activities to be of significant duration, including both the span of time over which the activity is spread and the number of hours spent in the activity (Bucynski & Hansen, 2009; Corcoran, McVay, & Riordan, 2003; Desimone et al., 2002; Garet et al., 2001; Johnson & Marx, 2009; Yoon et al., 2007).

Coherence

A coherent professional development program is defined as one that "is connected to student needs, teacher needs, school goals, the curriculum of the school, and state standards" (Borko, Elliott, & Uchiyama, 2008, p. 971). If teachers perceive a disconnect between what they are urged to do in a professional development activity and what they are required to do according to school curriculum guides, texts, and assessment practices, then the professional development will have little impact. Researchers have found that for significant improvements to occur in teachers practices and student learning, curriculum, assessment, standards, and professional learning activities must be closely linked to connect what teachers learn in professional development with what they are able to implement in their classrooms and schools (Birman et al., 2000; Firestone et al., 2005; Garet et al., 2001; Vanderberghe, 2003; Youngs & King, 2002).

Collective Participation

Despite cultural norms of teacher isolation and frustrations associated with early attempts at teacher collaboration, interest is growing in professional development that is designed for groups of teachers from the same school, department, or grade level (Borko et al., 2001; Hiebert et al., 2002). Research on effective professional development emphasizes the importance of collaborative learning environments in schools. Studies have found that when schools create productive working relationships within academic departments or grade levels, across them, or

among teachers school-wide, the benefits can include improved classroom instruction, enhanced student learning, and transformed school cultures (Burbank & Kauchak, 2003; Darling-Hammond et al., 2009; Hollins, McIntyre, DeBose, & Towner, 2004; James & McCormick, 2009; Putnam & Borko, 2000).

Purpose

With a national focus on the necessity of teacher professional learning, and a substantial research base clarifying the key characteristics of effective professional learning programs, one would expect current professional learning opportunities in U.S. schools to be in line with these standards of effective professional development. However, several studies (Blank et al., 2008; Darling-Hammond et al., 2009; Yoon et al., 2007) of U.S. public schools have found that traditional professional development practices remain the norm. With the current status of professional learning opportunities in U.S. public schools established, efforts are now turning to understanding why the gap between actual practices and research-based best practices exists and how this gap can be eliminated.

No national attention from politicians or the public has been given to the professional development practices of U.S. independent schools, and virtually no research exists on the learning opportunities available to U.S. independent school teachers. For U.S. independent schools to establish professional development practices consistent with research-based principles of effective teacher learning, accurate information about the current status of teacher learning in independent schools must be obtained. A necessary first step in addressing this problem is to develop a survey instrument which can be used to gather information about the professional learning opportunities available in U.S. independent schools. Therefore, the aim of the present study was to develop and examine the initial validation of an instrument, the Independent School

Teacher Development Inventory (ISTDI), designed to measure the professional learning opportunities available in U.S. independent schools. More specifically, the purposes of the present study were as follows: (a) to describe the development of the ISTDI, (b) assess psychometric characteristics of scores from the ISTDI, and (c) conduct both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to determine the number and composition of factors comprising the ISTDI. Given the theoretical foundation of the ISTDI, three a priori hypotheses were developed:

1. EFA will result in a six factor solution (traditional, content, duration, coherence, collective participation, and active learning) consistent with the theoretical development of the instrument.
2. CFA will result in a model-to-data fit for the six factor solution, and
3. Consistent with the theoretical development of the instrument, EFA and CFA will show small or negative correlations between the traditional professional learning factor and the five effective professional learning factors, and will show moderate positive correlations among the five effective professional learning factors.

Method

Instrument Construction

I developed the ISTDI for use with independent school division heads rather than independent school teachers because division heads have greater knowledge about all of the professional development opportunities in a school than individual teachers. Both the 2007–08 Schools and Staffing Survey (National Center for Education Statistics) and the 2007–08 Standards Assessment Inventory (National Staff Development Council) informed the development of survey items, but they were primarily developed from significant themes

identified in the review of literature. Messick (1994) emphasized that survey instruments must be designed from and aligned with research findings, stating that "the developer of a survey instrument must defend the content of the instrument based on the questions of the research and previous trends identified in the literature" (1994, p. 15).

More specifically, the six areas of the literature review (conventional professional development methods and the five principles of effective professional development: content focus, duration, coherence, collective participation, and active learning) served as the foundation for developing the survey items. Initial conventional professional development items included nine questions related to less effective workshops, speakers and short-term courses (Borko, 2004; Garet et al., 2001; Supovitz & Turner, 2000). The five core characteristics of effective professional development (content focus, duration, coherence, collective participation, and active learning) served as the foundation for other preliminary items (Darling-Hammond et al., 2009; Desimone, 2009; Webster-Wright, 2009). I developed nine questions to collect information about the content focus of professional learning opportunities, ten to collect information about the active learning emphasis of professional development activities, ten to collect data about the coherence of professional learning activities, eleven to collect information about the extent to which professional development activities included opportunities for collective participation, and eight questions to collect data about the duration of professional learning activities.

Consistent with content validation procedures specified by Haynes et al. (1995) and Lissitz and Samuelson (2007), I established appropriateness of item content in four ways. First, ten expert educational researchers in the field of teacher professional learning evaluated the preliminary items. Expert judgment and feedback related to the design and wording of instrument items is an essential part of establishing content validity (Lissitz & Samuelson, 2007;

Messick, 1994). I sent the preliminary items and the specific objectives of the instrument (to gather information on traditional professional development opportunities and those focused on content, active learning, coherence, collaboration, and duration) to the ten experts. The experts rated each item for clarity using a 5-point Likert-type format, with response options ranging from 1 (Not at all clear) to 5 (Extremely clear), and provided recommendations for removing items and adding items. Seven of the ten experts provided feedback on the preliminary items, resulting in the omission of seven questions, the addition of two new questions, and the revision of eight questions to improve clarity.

The second method of documenting item appropriateness followed revisions made in response to expert researcher comments. Ten independent school educators, all having over 20 years of experience working in independent schools, rated each item for clarity and content and provided suggestions and recommendations for adding and removing items. The feedback from these educators resulted in the revision of six questions to improve clarity, the omission of one question, and the addition of one question.

As both a third indication of item appropriateness, and as a method of detecting errors in the survey's form and presentation, I pilot tested the survey with a group of 20 former independent school division heads. I conducted pilot testing after revisions resulting from the feedback of both the expert researchers and independent school educators. I excluded current division heads from pilot testing because they were part of the target population for the actual study. I sent these 20 individuals the survey and asked them to provide feedback regarding the length of the survey, the design of the survey, and the clarity of the questions. Fifteen of the former division heads provided feedback, resulting in confirmation of appropriate survey length

(average completion time under 15 minutes), and modification of three questions to improve clarity.

Finally, I asked the fifteen former division heads that provided feedback to participate in cognitive interviews to detect unanticipated misinterpretations of the survey questions. Cognitive interviews involve interviewing potential respondents to "learn how specific questions are interpreted so that higher quality data can be gathered and the validity and reliability of surveys can be improved" (Desimone & Le Floch, 2004, p. 3). Twelve of the fifteen former division heads agreed to participate in the cognitive interviews, resulting in modification of four questions to improve clarity.

The Final Version of the Instrument

Section I of the ISTDI consisted of 40 Likert-type questions. I included six questions to collect information about conventional professional development methods. I included the thirty-four remaining items to collect information about the five core characteristics of effective professional development with six items focused on content, eight on active learning, eight on coherence, seven on collective participation, and five on duration. Respondents answered the questions using a five-point Likert-type scale, consisting of the following: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, and (5) Always. No clear agreement has emerged on the optimal number of response categories for reliability and validity, with some researchers arguing for seven categories (Cicchetti, Showalter, & Tyler, 1985; McKelvie, 1978) and others preferring five categories (Lissitz and Green, 1975; Neumann, 1979). During the initial test item development, respondents indicated their preference for discriminating among five categories over seven categories. Therefore, the five item scale was most appropriate for this study.

Section II of the survey collected demographic information about the division heads and their schools such as type of division head, years of experience as a division head, type of school, size of school, and location of the school. The aim of this section was to collect information that would help the researcher understand connections between the division heads and their schools and current opportunities for professional learning in independent schools.

Data Collection Procedures

I sent the ISTDI to all 3422 NAIS division heads (NAIS terminology for principal), 1264 of them being division heads of high schools, 1049 division heads of middle schools, and 1109 division heads of elementary schools. I distributed the surveys electronically using QuestionPro, a commercial electronic survey service. I chose electronic distribution over traditional mail distribution for three reasons. First, recent studies have found that mail distribution no longer produces significantly higher response rates than electronic distribution (Ammentorp, Rasmussen, Norgaard, Kirketerp, & Kofoed, 2007; Dixon & Turner, 2007). Second, the large number of surveys being distributed (3422) made electronic distribution more efficient in terms of time and finances. Finally, independent school leaders and NAIS personnel provided feedback during survey development revealing a preference for electronic distribution over mail distribution.

Participants

2474 NAIS division heads completed and returned surveys, for a 72% response rate. Approximately 41.4% of the participants were upper school heads (n = 1023), 27.2% of the participants were middle school heads (n = 674), and 31.4% of the participants were lower school heads (n = 777). Importantly, the percentages of the different division head types in the sample population were similar to the percentages of division heads in the target population:

approximately 38.9% of the target population was upper school heads (n = 1301), 28.8 % was middle school heads (n = 992), and 33.1 % of the target population was lower school heads (n = 1129). Regarding experience, approximately 18.1% of the participants had between one and three years experience as a division head (n = 448), 31.9 % between four and seven years experience (n = 789), 29.7% percent between eight and eleven years experience (n = 734), and 20.3% twelve or more years of experience as a division head (n = 502).

Data Analysis Procedures

Rationale. Because I based survey items on six characteristics of professional development identified in the research literature, I expected that survey items within each of the six areas would be positively correlated with one another, forming six dimensions or factors. For example, because I designed six items to collect information on traditional professional development practices, results were expected to show that scores on these six items would be strongly, positively correlated with one another. Similarly, I expected that scores on items within each of the five core areas of effective professional development would also be strongly, positively correlated with one another. To ascertain whether survey results would separate into these six areas or factors, I randomly split the data and planned an exploratory factor analysis on one half of the data, and a confirmatory factor analysis on the other half of the data. Simply put, exploratory factor analysis is concerned with investigating how many factors emerge among the items on an instrument, while confirmatory factor analysis is concerned with testing a hypothesis about the specific number of factors making up an instrument (Pedhazur & Schmelkin, 1991).

Step 1: Exploratory factor analysis. Prior to conducting the EFA, I examined two indicators with the entire data set to determine whether the data was appropriate for such an analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy was .934 which indicated that

data were appropriate for factor analysis, and Bartlett's test of sphericity was significant, $\chi^2(741)= 64378.04$, $p < .001$, indicating that the sample and correlation matrix were suitable for factor analysis. I used exploratory factor analysis procedures was on a randomly assigned half of the data set henceforth referred to as the exploratory sample (n = 1237), to examine the factor structure of the instrument. I selected principal axis factoring as the factor extraction method because it partitions shared variance from error variance avoiding inflated measures of variance accounted for by the factors (Costello & Osborne, 2005; Henson & Roberts, 2006). I then rotated the factors using the direct oblimin method because I expected several factors to correlate (Costello & Osborne, 2005; Pedhazur & Schmelkin, 1991).

Several criteria guided the determination of the number of factors to be retained, including the K1 rule, examination of the resulting scree plot, parallel analysis, Velicer's minimum average partial (MAP) test, and interpretability of the factor solution (Stevens, 2002; Pedhazur & Schmelkin, 1991). While researchers frequently use both the K1 rule and the scree test, parallel analysis and the MAP test are not as widely known but researchers recommend them when evaluating the number of factors to retain (Henson & Roberts, 2006; Thompson, 2004). Although all four procedures focus on the initial extraction eigenvalues, they do so in different manners. The K1 rule retains all factors with eigenvalues greater than 1.0 and the scree test is used to visually examine the plotted eigenvalues for significant changes between adjacent pairs of plotted eigenvalues (Stevens, 2002). Parallel analysis compares the initial extraction eigenvalues with random data sets that are of the same size as the data under study. When the eigenvalue for a factor in the random data exceeds the size of the factor in the true data set, only the preceding factors are retained for additional analysis (Kieffer & Reese, 2008; Thompson; 2004). Finally, the MAP test uses the variable correlations matrix and, in multiple steps,

removes variance associated with the factors until the step that results in the lowest squared partial correlation. At this point, only the preceding factors are retained for additional analysis (O'Conner, 2000; Velicer, 1976).

Step 2: Confirmatory factor analysis. I used confirmatory factor analysis procedures with the other half of the data set, henceforth referred to as the confirmatory sample (n = 1237), to confirm the models determined in EFA. As recommended by Stevens (2002) and Henson and Roberts (2006), a variety of fit indices provided estimates of model "fit". Because the Chi-square fit index often rejects models with large samples (over 500), the following fit indices were more appropriate for this study (Thompson, 2004). I used the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI), which are less sensitive to sample size than the Chi-square index (Henson & Roberts), and the root mean square of approximation (RMSEA). The CFI and TLI are classified as incremental fit indices because they assess the amount of improvement in fit by comparing the target model to a more restricted baseline model (Aydin & Uzuntiryaki, 2009). The CFI and TLI range from 0 to 1 with values greater than .90 indicating an adequate model fit (Garson, 2006), although values greater than .93 are preferable (Hu & Bentler, 1999). The RMSEA is an example of an absolute fit index, meaning it determines how well an a priori model fits the sample data (McDonald & Ho, 2002). With the RMSEA, values of less than .06 indicate a good fit, and values as high as .08 indicate a reasonable fit (Hu & Bentler, 1999).

Step 3: Reliability measures. For the remaining analyses, the entire sample (n = 2474) was used. The Cronbach alpha coefficient provided a measure of internal consistency or reliability of scores on the entire instrument and the identified factors. Alpha coefficients range in value from 0 to 1, with higher scores indicating greater reliability. Researchers (Jacobs &

Razivieh, 2001; Santos, 1999) generally regard reliability coefficients above 0.8 to be acceptable for factors and coefficients above .7 to be acceptable for an entire instrument.

Results

Exploratory Factor Analysis

Table 1 presents the factor pattern coefficients, factor structure coefficients, and communalities from the principal axis extraction and direct oblimin rotation of the exploratory sample. Five factors with eigenvalues greater than 1.0 were extracted, accounting for 68.7% of the variance of the original items. The scree test (Figure 3) also suggested a five factor solution as there were five factors to the left of the major inflexion point. Finally, both the MAP test and parallel analysis further suggested the retention of five factors. All of these results, combined with the theoretical meaningfulness of a five-factor solution, led to the retention of five factors.

Table 1

Bivariate Correlations between Factors

	Factor 1: Active Learning/ Collaboration	Factor 2: Content Focus	Factor 3: Coherence	Factor 4: Traditional	Factor 5: Duration
Factor 1: Active Learning/ Collaboration	1.00	-.08*	.04**	-.29**	.51**
Factor 2: Content Focus		1.00	.15*	.43**	-.23**
Factor 3: Coherence			1.00	-.21**	.37**
Factor 4: Traditional				1.00	-.52**
Factor 5: Duration					1.00

*$p < .05$, **$p < .01$

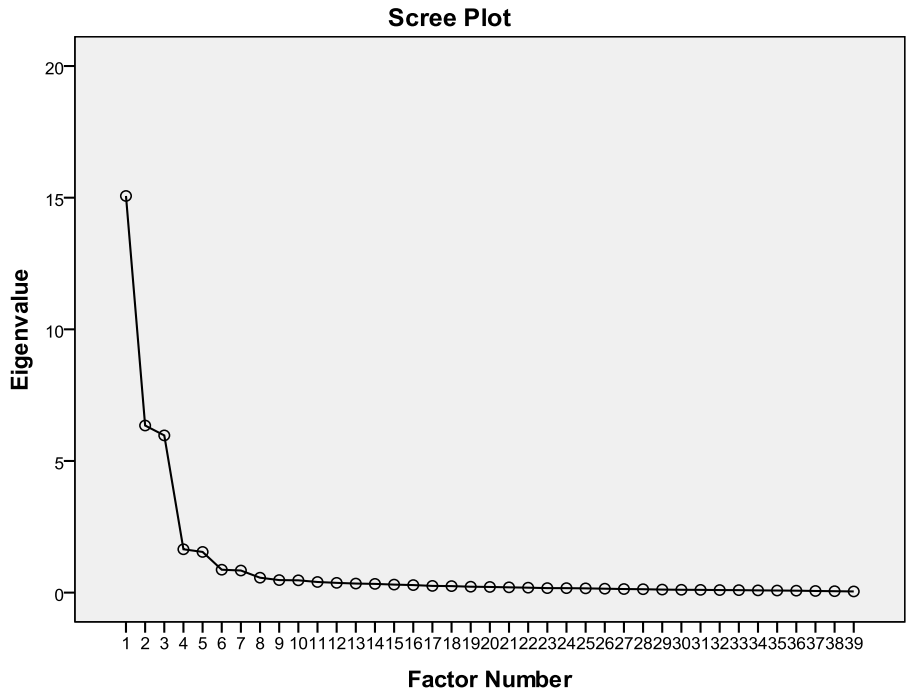


Figure 3. EFA Scree Plot

Factor one consisted of 15 items, each with a pattern coefficient greater than .70, and accounted for 33.62% of the variance. The items comprising this factor consisted of the seven items developed to collect information on the active learning aspect of effective professional development and the eight items developed to collect information on the collective participation aspect of effective professional development. Factor one was therefore named Active Learning/Collaboration. Although the review of literature supported the hypothesized separation of the active learning items and collective participation items, the fact that "activities involving active teacher learning often include teacher collaboration" (Darling-Hammond et al., 2009, p. 11) makes this result meaningful and consistent with the theoretical foundation of the instrument.

Items comprising factors two through five were consistent with expectations based on the theoretical foundation of the instrument. Factor two consisted of six items focused on professional development activities emphasizing the learning of specific content knowledge and,

thus, was named Content. The Content factor accounted for 13.61% of the variance and all pattern coefficients were greater than .79. The third factor consisted of seven items, each with a pattern coefficient greater than .78, and accounted for 12.66% of the variance. This factor contained items examining the coherence of professional development programs and was therefore named Coherence. Factor four consisted of five items focused on traditional professional development activities and was therefore named Traditional. The Traditional factor accounted for 4.60% of the variance and all pattern coefficients were greater than .73. Finally, factor five was named Duration because all six of the items comprising this factor focused on the duration of professional development activities. The Duration factor accounted for 4.17% of the variance and all pattern coefficients were greater than .76.

Table 2

Rotated Factor Pattern and Structure Coefficients for the ISTDI

Item	Factor 1: Active Learning/ Collaboration P (S)	Factor 2: Content Focus P (S)	Factor 3: Coherence P (S)	Factor 4: Traditional P (S)	Factor 5: Duration P (S)	h^2
26. Professional development activities include opportunities to observe and critique other teachers.	**.84** (.87)	.09 (.06)	-.01 (.06)	-.04 (-.26)	.06 (.46)	.76
25. Professional development provides opportunities for teachers to collaboratively examine and discuss student work.	**.83** (.81)	-.06 (-.08)	.04 (.05)	-.09 (-.31)	-.10 (.39)	.67
40. Teachers have opportunities to apply and practice new skills and knowledge during professional development activities.	**.82** (.82)	-.11 (-.12)	.02 (.03)	-.04 (-.30)	-.03 (.43)	.69
22. Professional development activities include peer coaching.	**.82** (.82)	-.02 (.04)	.05 (.07)	.17 (-.13)	.09 (.44)	.70
33. Teachers have opportunities to practice skills gained during professional development with colleagues prior to integrating skills into the classroom.	**.81** (.79)	-.09 (-.07)	-.02 (-.01)	.07 (-.21)	-.02(.38)	.68

(continued)

Table 2 (continued)

Item	Factor 1: Active Learning/ Collaboration P (S)	Factor 2: Content Focus P (S)	Factor 3: Coherence P (S)	Factor 4: Traditional P (S)	Factor 5: Duration P (S)	h^2
39. We provide formal training for teachers on how to effectively collaborate.	**.81** (.75)	-.05 (.04)	.06 (-.01)	.10 (-.09)	-.16 (.23)	.64
21. Soon after returning from offsite professional development teachers formally share their learning with their colleagues.	**.80** (.78)	-.01(-.04)	.03 (.04)	-.13 (-.31)	-.12 (.36)	.63
5. Research based best practices inform our professional development activities.	**.79** (.84)	-.02 (-.06)	-.01 (.07)	-.07 (-.35)	.08 (.51)	.74
17. Teachers plan instruction together.	**.77** (.83)	.10 (-.03)	-.06 (.06)	-.21 (-.43)	.06 (.52)	.79
8. We select/design professional development activities based on an analysis of student needs.	**.76** (.84)	.04 (-.02)	-.05 (.07)	-.03 (-.33)	.19 (.56)	.80
37. We provide structured support for teachers implementing new skills until they become a natural part of their classroom instruction.	**.75** (.80)	-.02 (-.02)	-.09 (-.03)	.15 (-.16)	.19 (.47)	.69
31. Our professional development activities take place on weekdays between 8:00am and 3:00pm.	**.73** (.79)	.11 (.10)	-.05 (.05)	.13 (-.13)	.21 (.48)	.68
2. Teachers participate in setting the goals of the professional development program.	**.72** (.82)	.13 (.02)	-.02 (.13)	-.19 (-.41)	.15 (.56)	.80
24. Beginning teachers have formal opportunities to work with mentor teachers.	**.71** (.81)	.12 (.02)	.01 (.15)	-.13 (-.40)	.18 (.60)	.79
10. Teachers meet by grade level to discuss instruction and student learning.	**.71** (.80)	.04 (-.12)	-.04 (.09)	-.20 (-.46)	.11 (.58)	.78
20. Teachers meet by content area to discuss instruction and student learning.	-.03 (-.02)	**.84** (.81)	-.03 (.10)	-.03 (.33)	.03 (-.17)	.66
29. We design professional development to help teachers integrate technology into their content.	.02 (-.02)	**.83** (.85)	.05 (.14)	-.02 (.37)	-.08 (-.23)	.73
12. Professional development activities focus on specific pedagogical skills.	.02 (.01)	**.82** (.81)	.04 (.15)	-.05 (.31)	-.04 (-.18)	.67
23. Professional development is focused on helping teachers understand how students learn best in specific content areas.	.03 (-.04)	**.81** (.86)	.03 (.11)	.08 (.45)	-.08 (-.27)	.77
32. We design professional development to help teachers learn instructional methods for their specific discipline.	.01 (-.06)	**.80** (.85)	.02 (.10)	.14 (.50)	-.02 (-.28)	.81

(continued)

Table 2 (continued)

Item	Factor 1: Active Learning/ Collaboration P (S)	Factor 2: Content Focus P (S)	Factor 3: Coherence P (S)	Factor 4: Traditional P (S)	Factor 5: Duration P (S)	h^2
1. Professional development is focused on teachers understanding the content of their discipline.	-.03 (-.05)	**.80** (.83)	-.02 (.09)	.09 (.43)	.04 (-.22)	.71
14. Our personnel conduct our professional development activities.	-.05 (-.04)	.03 (.18)	**.86** (.86)	.10 (-.08)	.04 (.28)	.75
7. Professional development activities relate directly to our institutional goals.	.01 (.09)	.06 (.12)	**.86 (**.91)	-.07 (-.28)	.09 (.44)	.85
35. Teacher professional development is part of our school improvement plan.	.09 (.14)	.02 (.08)	**.85** (.88)	-.18 (-.35)	-.07 (.39)	.81
27. Professional development activities are aligned with the school curriculum.	.01 (.03)	-.01 (.13)	**.84** (.83)	.03 (-.15)	-.02 (.29)	.71
9. Professional development activities occur onsite at our school.	.03 (.09)	-.07 (.05)	**.83** (.86)	.02 (-.24)	.07 (.41)	.76
15. Specific teacher needs inform the design of our professional development activities.	-.05 (-.01)	.05 (.16)	**.82** (.85)	-.01 (-.15)	.02 (.30)	.73
38. We involve teachers in designing the activities of our professional development program.	-.02 (.01)	.01 (.13)	**.79** (.82)	.04 (-.14)	.03 (.31)	.68
6. Outside experts conduct our professional development activities.	-.03 (-.33)	.06 (.45)	-.01 (-.21)	**.86** (.91)	-.07 (-.54)	.88
11. Teachers attend conferences as part of the professional development program.	.01 (-.29)	.05 (.41)	-.03 (-.24)	**.80** (.87)	-.10 (-.53)	.79
34. Our school pays outside consultants to present professional development activities to our teachers.	-.06 (-.36)	.05 (.42)	-.02 (-.22)	**.80** (.86)	-.11 (-.57)	.83
3. Teachers participate in workshops as part of our professional development program.	.02 (-.22)	.09 (.43)	-.08 (-.24)	**.79** (.84)	-.01 (-.46)	.74
18. Teachers take courses as part of the professional development program.	-.07 (-.35)	.15 (.51)	.03 (-.16)	**.74** (.85)	-.12 (-.56)	.83
36. Over the course of the school year teachers are engaged in planned professional learning activities for more than 40 hours.	.03 (.48)	-.02 (-.22)	.05 (.38)	-.06 (-.52)	**.85** (.89)	.84
28. Time is scheduled each week for teachers to discuss what they learn from professional development activities with colleagues.	.02 (.44)	-.09 (-.25)	.07 (.37)	.05 (-.45)	**.84** (.88)	.78
19. Professional development activities occur every week.	.02 (.48)	.01 (-.23)	.06 (.41)	-.13 (-.58)	**.82** (.88)	.89

(continued)

Table 2 (continued)

Item	Factor 1: Active Learning/ Collaboration P (S)	Factor 2: Content Focus P (S)	Factor 3: Coherence P (S)	Factor 4: Traditional P (S)	Factor 5: Duration P (S)	h^2
13. Teachers spend more than one hour each week engaged in professional development activities.	.05 (.48)	-.03 (-.24)	.04 (.35)	-.06 (-.52)	**.82** (.87)	.82
16. Teacher study groups meet each week as part of our professional development activities.	.06 (.47)	-.05 (-.25)	.06 (.37)	-.06 (-.50)	**.78 (**.84)	.76
4. Professional development activities are built into the regular work day of teachers.	.07 (.50)	-.07 (-.29)	.09 (.40)	-.13 (-.60)	**.77** (.86)	.88
Eigenvalues	12.04	6.09	5.72	1.67	1.54	
% of variance after rotation	33.62	13.61	12.66	4.60	4.17	
α	.95	.93	.94	.95	.93	

Note: P = pattern coefficients; S = structure coefficients; h^2= communalities; Pattern coefficients greater than .40 are in bold; these are used for interpretation of the factors. Percentage variance is postrotation. The eigenvalue for the sixth, unretained factor was .87.

When theoretically-based expectations of correlations between factors inform using oblique rotations, it is important to report both pattern and structure coefficients (Henson & Roberts, 2006). While the pattern coefficients are used for the interpretations of the factors, the structure coefficients provide an important indication of the correlations between factors. Large structure coefficients were obtained for more than one factor on many items, a result consistent with moderate to high correlations between some factors (Fletcher & Nusbaum, 2010; Graham, Guthrie, & Thompson, 2003). The oblique rotation yielded seven correlated factors and all were statistically significant at the $p < .01$ level (Table 1): r = .51 (the active learning/collaboration factor and duration factor), r = .43 (the content factor and traditional factor), r = .37 (the coherence factor and duration factor), r = -.52 (the traditional factor and duration factor), r = -.29 (the active learning/collaboration factor and traditional factor), r = -.23 (the content factor and duration factor), and r = -.21 (the coherence factor and traditional factor).

Confirmatory Factor Analysis

I used confirmatory factor analysis procedures with the confirmatory sample to test the five factor model revealed in the EFA. Following the recommendations of Pedhazur and Schmelkin (1991) and Thompson (2004), four competing models were tested. Each of the four models hypothesized a priori that (a) responses to the ISTDI could be explained by the five factors labeled "traditional", "content", "coherence", "duration" and "active learning"; (b) each item would have a moderate to high loading on one factor and low loadings on all other factors; and (c) the error-uniqueness terms associated with the item measurements were uncorrelated. The four models differed in their predictions of the correlations between the five factors, with Model 1 being most closely connected to the correlations between factors revealed in the EFA, and being most consistent with the theoretical foundation of the ISTDI. Model 1, based on all correlations above .20 between factors in the EFA, hypothesized that (a) the "traditional factor would be correlated with all other factors; (b) the "duration" factor would correlated with all other factors; (c) the "coherence" factor would be correlated with the "duration" factor and the "tradition" factor; (d) the "content" factor would be correlated with the "traditional" factor and "duration" factor; and (e) the "active learning" factor would be correlated with the "traditional" factor and the "duration " factor. Correlations between factors were excluded from Model 1 if their coefficients indicated no relationship, ($r = -.08$ for the content factor and active learning/collaboration factor, $r = .04$ for the coherence factor and active learning/collaboration factor) or a very small relationship ($r = .13$ for the coherence factor and content factor).

Models 2-4 served as comparison models and each contained elements inconsistent with the theoretical foundation of the instrument and inconsistent with correlations between factors revealed in the EFA. Model 2, based on all correlations above .35 between factors in the EFA,

hypothesized that (a) the "traditional" factor would be correlated with the "content" factor" and the "duration" factor (b) the "duration" factor would be correlated with "tradition" factor, the "coherence" factor, and the "active learning" factor; (c) the "coherence" factor would be correlated with the "duration" factor; (d) the "content" factor would be correlated with the "traditional" factor; and (e) the "active learning" factor would be correlated with the "duration" factor. Model 3, based on all correlations above .50 between factors in the EFA, hypothesized that (a) the "traditional" factor would be correlated with the "duration" factor and (b) that the "active learning factor would be correlated with the "duration" factor. Model 4 hypothesized that no correlations exist between the five factors.

Fit indices for the four models are presented in Table 3. Chi-square values for Model 1 (χ^2 = 5484.78, *df* = 695, $p < .001$), Model 2 (χ^2= 4731.18, *df* = 697, $p < .001$), Model 3 (χ^2= 3417.96, *df* = 699, $p < .001$), and Model 4 (χ^2 = 2780.04, *df* = 701, $p < .001$) were statistically significant, indicating that none of the four models fit the data exactly. However, with large samples this is common with the Chi-square statistic, and is why additional indices are used here.

Table 3

Fit Statistics for Confirmatory Factor Analyses of the ISTDI (n=1237)

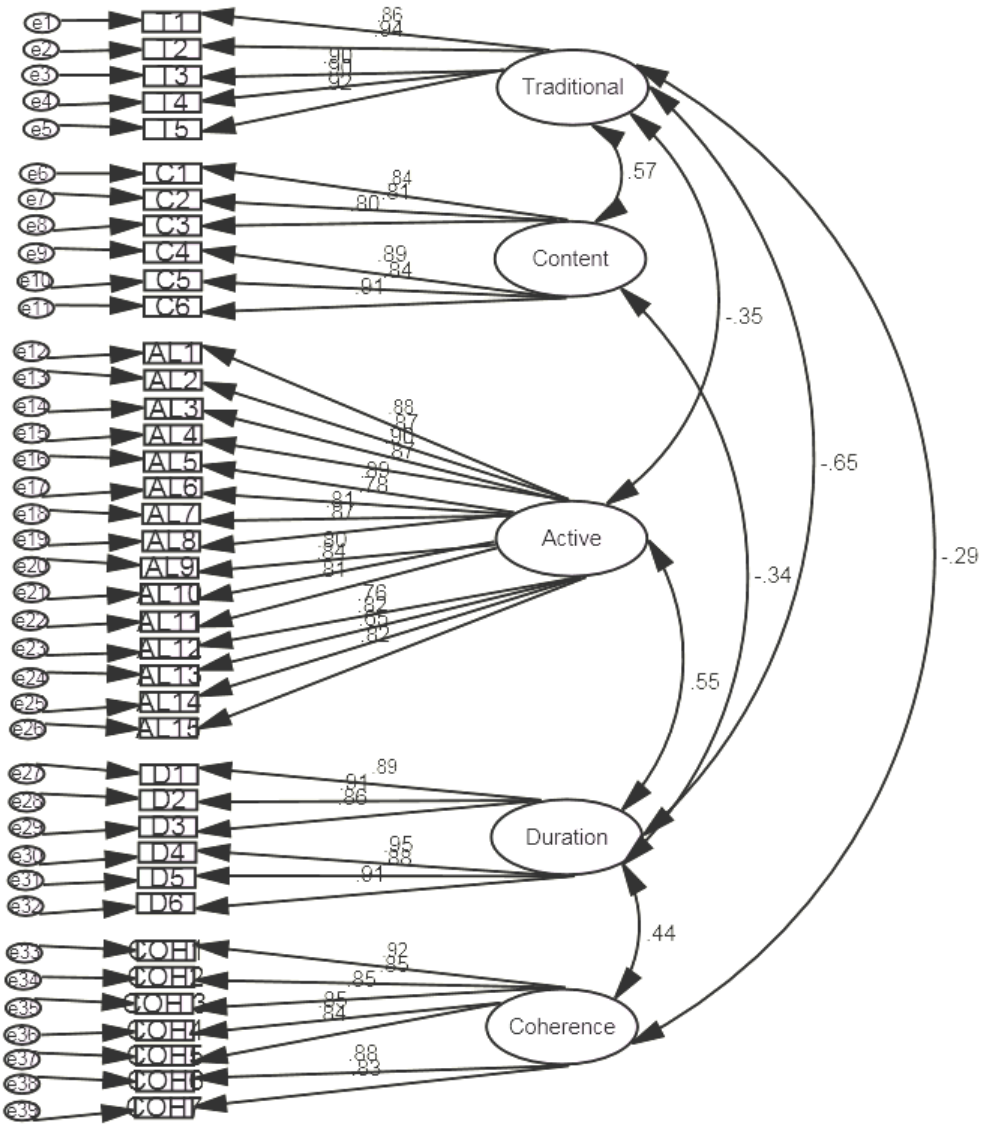
	Model 1	Model 2	Model 3	Model 4
χ^2	5484.78**	4731.18**	3417.96**	2780.04**
df	695	697	699	702
CFI	.953	.912	.812	.678
TLI	.945	.903	.794	.661
RMSEA	.057	.094	.119	.142
RMSEA 90% CI lower	.060	.091	.116	.138
RMSEA 90% CI upper	.065	.098	.122	.145

Note: ISDI = Independent School Teacher Development Inventory; CFI= Comparative Fit Index; TLI= Tucker-Lewis Index; RMSEA= root mean square of approximation; CI= confidence interval. **p < .001.

Results of the other three fit indices indicated that Model 4 was a poor fit with the data: CFI =.678, TLI = .661, and RMSEA = .142. Results indicated an improved fit for Model 3, but the values were still far removed from the range of acceptable fit values: CFI = .812, TLI = .794, RMSEA = .119. The values for Model 2 approached the range of acceptable fit (CFI = .912, TLI = .903, RMSEA = .091), but the indices for Model 1 were universally superior with all three fit indices reaching the rigorous criteria set by Hu and Bentler (1999) for an excellent fit with the data: CFI = .953, TLI = .945, RMSEA = .057. Taken together, the results of the confirmatory factor analysis provided additional support for the five factor structure of the ISTDI scores established in the EFA. Furthermore, it provided support for the between-factor correlations found in the EFA and specified in Model 1 of the CFA. Model 1 is presented in Figure 4 below.

Internal Consistency Reliability and Scale Properties

Alpha reliability coefficients provided measures of internal consistency. The alpha coefficient for scores for the entire instrument was .92, which is high (Henson, 2001), and alpha coefficients for the five factors were also high, ranging from .93 to .95. All corrected item-to-total correlations for the items on the five factors were positive and in excess of .75, indicating that all items contributed to the consistency of scores (Henson, 2001). I formed scale scores by averaging the items belonging to each factor. Table 4 presents the alpha coefficients for the five factors, as well as the means and standard deviations for the five scales.



Note: Path coefficients and correlations between factors for Model 1

Figure 4. Confirmatory Factor Analysis Model

Table 4

Factor Reliabilities and Scale Properties

Factor	Number of Items	α	M	SD
Factor 1: Active Learning/ Collaboration	15	.95	2.17	.76
Factor 2: Content Focus	6	.93	3.47	.71
Factor 3: Coherence	7	.94	2.92	.82
Factor 4: Traditional	5	.95	4.50	.68
Factor 5: Duration	6	.93	1.42	.81

Discussion

The purpose of the present study was to develop and examine the initial validation of an instrument, the Independent School Teacher Development Inventory (ISTDI), designed to measure the professional learning opportunities available in U.S. independent schools. After a thorough literature search, content examination by experts, a pilot study with experts, and cognitive interviews with experts, I sent the final form of the ISTDI electronically to all 3422 NAIS division heads and 2474 (72%) completed the survey.

Exploratory factor analysis on a randomly split half of the data revealed five factors, corresponding to traditional professional development practices and four types of effective professional development practices (content, duration, active learning/ collaboration, and coherence). Confirmatory factor analysis on the second half of the data supported a five-factor model. This section will explain these findings, suggest directions for future research, and discuss potential implications of these findings for independent school practitioners.

Because the research literature informed the ISTDI item development for the six characteristics of professional development, the original hypothesis predicted that exploratory factor analysis would reveal six factors (one corresponding to traditional professional development and five corresponding to different aspects of effective professional development). However, exploratory factor analysis results revealed that the ISTDI comprised five factors: traditional, content, duration, coherence, and active learning/collaboration. Statistical support for the five factor model was strong with all four criteria (K1 rule, scree plot, parallel analysis, and MAP test) supporting a five factor solution. Further, analyses of items comprising each of the five ISTDI factors revealed high pattern coefficients and little cross-loading, suggesting that each factor assessed unique variance attributed to a professional development subtype. In addition, all of the fit indices used in the confirmatory factor analysis supported the five-factor model and specific between-factor correlations identified in the exploratory factor analysis. Finally, internal consistency measures for the entire instrument and each of the five factors were excellent.

While results generally were consistent with the theoretical foundation of the ISTDI, there were several unexpected results. First, it was expected that the active learning items and collective participation items would form separate factors. However, the fact that active teacher learning often includes teacher collaboration makes this result understandable and consistent with the theoretical underpinnings of the instrument. Additional surprising results were found regarding the pattern of correlations among the five factors. It had been predicted that the factors related to effective professional development would be moderately positively correlated with one another but would be negatively correlated, or not correlated, with the factor corresponding to traditional professional development. Findings revealed, though, that while the traditional factor was negatively correlated with the duration, coherence, and active learning/collaboration factors,

it was moderately positively correlated with the content factor (r = .43). This result may be due to the fact that traditional forms of professional development (workshops, speakers, conferences, and courses) have typically emphasized content over coherence, duration, active learning, and collaboration. In addition, it was found that the active learning/collaboration factor was not correlated with the coherence factor (r = .04). One possible explanation is the "fragmentation of effective professional development practices" (Zepeda, 2008, p. 123), meaning that even when schools are using professional learning activities which involve active learning and teacher collaboration they may not be connecting them to student needs, teacher needs, or school goals. Finally, the content factor was not correlated with the active learning/collaboration factor (r = -.08), was not correlated with the coherence factor (r = .13), and had a negative correlation (r = -.23) with the duration factor. This is likely due to the fact that traditional forms of professional development have emphasized content while neglecting active learning/collaboration, coherence, and duration.

This study provides promising support for a five-factor instrument that assesses professional development practices in independent schools. The ISTDI developed in this study may enable researchers and practitioners to not only assess the current status of professional learning opportunities in independent schools, but also determine the extent to which the gap between current practices and research-based best practices of effective professional development is closed in future years. Ultimately, the ISTDI developed in this study may not only be a useful tool in informing independent school leaders as they work to move towards the standards established for effective professional development, but also help improve teacher instruction and student outcomes.

Because any initial survey construction and validation is contingent on the sample from which the data are derived and the sample here was purposely restricted to independent schools, data obtained from public schools across multiple environments are clearly necessary to provide further empirical support for the validity of the ISTDI, as well as the generalization of the current findings beyond independent schools. Further, previous efforts to measure professional development practices in schools have typically gathered data from teachers, rather than administrators. While the ISTDI was developed for use with school administrators, it may be relevant for use with teachers and data obtained from teachers in both independent and public schools is needed to validate the ISTDI with this population and provide additional support for the current findings.

CHAPTER V. MANUSCRIPT 2: A STATUS REPORT ON TEACHER PROFESSIONAL LEARNING IN UNITED STATES INDEPENDENT SCHOOLS

Abstract

Research efforts have led to greater understanding about the essential characteristics of professional learning opportunities that impact teachers' knowledge and instruction. A recent national study (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009) found that professional development opportunities in U.S. public schools are not consistent with research-based practices of effective teacher learning, but no research exists on professional development practices in U.S. independent schools. For U.S. independent schools to make progress towards the standards established for effective professional development, an accurate picture of current teacher learning opportunities in independent schools is needed. The present study addressed this problem by conducting a national survey of independent schools to assess the extent to which professional development opportunities in independent schools align with research findings about effective professional development. Results indicated that a significant gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development. For example, results indicated that independent school professional learning activities rarely extend over time, rarely connect to teacher or student needs, rarely involve teacher collaboration and active teacher learning, and rarely focus on helping teachers understand how students best learn specific subject matter. With information now available on current professional development practices, it is essential for

independent school leaders to move towards examining why a gap between best practices and reality exists and how this gap can be closed.

Introduction

Educational reform movements in the United States and around the world are seeking to transform schools and increase student achievement. Teachers are at the center of educational reform, for they must carry out the demands of high standards in the classroom (Fullan, 2001). However, "the teaching and learning required in these reforms is not something most American teachers know how to do" (Borko, Elliott, & Uchiyama, 2001, p. 970) because many of them learned to teach at a time when memorizing facts was emphasized over promoting a deeper understanding of subject matter (Borko, 2004). For these reform visions to be realized, many teachers will need to make major changes in their knowledge and beliefs, as well as their instructional practices (Darling- Hammond et al., 2009; Desimone, 2009). Yet, as Borko (2004) has emphasized, "if educational reform efforts are to succeed, it is imperative that teachers meet these challenges" (p. 971).

Understanding the importance of meeting these challenges, politicians and educators have made excellent professional learning opportunities for public school teachers a priority in most modern reform proposals (Fishman, Marx, Best, & Tal, 2003). Underlying these calls for improved teacher professional development opportunities is the premise that enhancing the knowledge and skills of teachers will lead to better instruction and, in turn, increased student achievement (Borko, Elliott, & Uchiyama, 2001; Youngs & King, 2002).

Several decades of research on effective professional development has led to considerable agreement about the essential characteristics of learning opportunities that can improve teachers' knowledge and practices (Blank, de las Alas, & Smith, 2008; Desimone,

2009). Unfortunately, a recent national study (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009) found that most U.S. public school teachers currently do not have access to the types of effective professional learning opportunities needed to improve their instruction. Meanwhile, professional development practices in U.S. independent schools, those schools not dependent on the government for funding, have not been examined by researchers. For U.S. independent schools to approach the standards established for effective professional development, and thereby improve teacher instruction and student achievement, accurate data regarding the current status of teacher learning in independent schools is required. This study addresses this research gap by conducting a national survey to determine the extent to which professional development opportunities in U.S. independent schools align with what research says about effective professional development practices.

Defining Effective Professional Development

Many different types of activities and interactions can increase teachers' knowledge and skills and improve their instruction. These experiences can range from structured workshops given on in-service days, to more informal discussions with other teachers about instructional methods or assessment strategies, embedded in the regular work day of teachers. Acknowledging this reality, professional development is currently defined as "externally-provided and job-embedded activities that increase teachers' knowledge and skills and change their instructional practice in ways that support student learning" (Darling-Hammond et al., 2009, p. 1).

This paradigm embodied in the current definition of professional development is new to schools because for many years the professional development available to teachers consisted solely of formal workshops, speakers, or short-term courses (Webster-Wright, 2009).

Researchers have consistently demonstrated the ineffectiveness of such "one-shot" professional development approaches (Guskey, 1986; Ingvarson, Meiers, & Beavis, 2005; Supovitz & Turner, 2000), concluding that they are disconnected from the needs of schools and teachers and do not influence classroom instruction. Bredeson (2002) called traditional "one-shot" professional development approaches "impediments to bringing about real improvements in teaching practices" (p. 665), while Fullan (2001) observed that "nothing has been so frustratingly wasteful as the thousands of workshops and conferences that led to no significant change in practice when teachers returned to their classrooms" (p. 315).

The clear ineffectiveness of conventional professional development methods has led to a large body of research aimed at specifying the key characteristics of effective professional development. This research is creating significant agreement about the essential features of professional development activities that are critical to increasing teacher knowledge and skills, and elevating student achievement. The key characteristics of effective professional development includes a focus on pedagogical content knowledge, alignment with school improvement goals, duration over time, collaborative work groups, and active methods of teacher learning (Desimone, 2009; Guskey, 2003).

Pedagogical Content Focus

Teachers with high pedagogical content knowledge "understand how to effectively match specific teaching approaches with the details of their academic discipline, understand common student misconceptions, and are able to connect the essential concepts of their discipline to the world of the learner" (Zepeda, 2008, p. 77) . Multiple studies have found that professional development positively influences both teacher knowledge and classroom teaching practices when it emphasizes deep understanding of subject content matter and how to teach specific kinds

of content to learners (Baniflower, Heck, & Weiss, 2005; Buczynski & Hansen, 2009; Posnanski, 2002).

Coherence

Another core feature of effective professional development is coherence, the extent to which professional development "is connected to student needs, teacher needs, school goals, the curriculum of the school, and state standards" (Borko, Elliott, & Uchiyama, 2008, p. 971). Researchers have found that improvements in instruction and student achievement occur when curriculum, assessment, standards, and professional learning activities are closely linked to connect what teachers learn in professional development with what they are able to implement in their classrooms and schools (Birman, Desimone, Porter, & Garet, 2000; Bryk, Camburn, & Louis; 1999; Vanderberghe, 2003).

Duration

There is growing agreement that professional learning activities must be of sufficient duration, including both the span of time over which the activity takes place (for example, one day or an entire semester) and the number of hours spent in the activity (Blank & de las Alas, 2009; Corcoran, McVay, & Riordan, 2003; Desimone et al., 2002). Research has not indicated a precise "tipping point" for duration but there is evidence supporting activities that are spread over an entire semester and include more than 40 hours of contact time (Johnson & Marx, 2009; Supovitz & Turner, 2000). Teacher learning activities of longer duration provide opportunities for greater in-depth discussion of content, student misconceptions, and instructional strategies, and are more likely to encourage teachers to test new approaches in the classroom and obtain feedback on their instruction (Bucynski & Hansen, 2009; Corcoran, McVay, & Riordan, 2003; Johnson & Marx, 2009).

Collective Participation

Another critical feature is collective teacher participation. Teachers who regularly work together are more likely to discuss concepts, skills, and problems that arise during their professional development experiences, and research has found that the benefits from such collaboration includes improved classroom instruction, enhanced student learning, and transformed school cultures (Burbank & Kauchak, 2003; Darling-Hammond et al., 2009; James & McCormick, 2009; Putnam & Borko, 2000).

Active Learning

Effective professional development also includes opportunities for teachers to engage in active learning (Burbank & Kauchak, 2003), which has been linked by several researchers to collective teacher participation (Desimone, 2009; Murray, unpublished, 2010). Little (2009) argues that "for professional development to be effective it must be embedded in teachers' work so they can experience for themselves the learning they ask their students to do" (p. 220). Researchers have found that professional development is most effective when it actively involves teachers in learning and provides opportunities for authentic work that builds their knowledge of their discipline and how to teach it to their students (Borko, 2004; Bredeson, 2002; Buczynski & Hansen, 2009; Johnson, 2007; Posnanski, 2002).

Purpose of the Study

Recent research on the characteristics of effective teacher learning has led to a new definition of professional development in schools. Effective professional development is now viewed as those experiences which build teacher capacity and generate transformations in teaching practice resulting in improved student learning. With greater knowledge and understanding about what constitutes effective teacher learning and with a significant emphasis

being placed on professional development being crucial to improving schools, comes the expectation that "professional development practices in U.S. public schools should be moving towards these quality guidelines" (Darling-Hammond et al., p. 24). However, multiple national studies (Birman, LeFloch, Wayne, & Yoon, 2007; Blank, de las Alas, & Smith, 2007; Darling-Hammond et al., 2009; Garet et al., 2002) have demonstrated that professional development opportunities in U.S. public schools do not meet the standards for effective professional development. Findings show that professional development in U.S. public schools is typically of short duration, fails to actively engage teachers in activities, lacks focus on content knowledge, is disconnected from teacher and student needs, is rarely collaborative, and is found useful by less than half (41 percent) of teachers experiencing it (Darling-Hammond et al., 2009). However, research-based principles of effective teacher learning are integral components of the professional development programs of countries scoring highest on PISA (Programme for International Student Assessment) and TIMSS (Third International Math and Science Study), international assessments in which U.S. students finish in the middle of the pack (Darling-Hammond et al., 2009).

Results on PISA and TIMSS, combined with the results of the most recent national study (Darling-Hammond et al., 2009) on professional development practices in U.S. public schools, have heightened awareness and concern about the gap between effective professional development characteristics and the current status of teacher development in U.S. public schools. Researchers are currently examining the organizational, policy, and structural factors which may be hindering efforts to provide U.S. public school teachers the high-quality professional learning opportunities enjoyed by teachers in many other nations (Blank et al., 2008). Therefore, research

efforts have moved from questions about *what* is happening, to *why* it is happening and *how* it can be changed.

As with public schools, the primary forms of professional development available for independent school teachers have historically been workshops, speakers, and conferences (Bassett, 2006; Jorgenson, 2006). However, there has been no demand from educational researchers, politicians, or the public for improved professional learning opportunities for independent school teachers. In fact, while there have been hundreds of studies focused on professional development in U.S. public schools (Desimone, 2009), there is no existing research on professional development practices in U.S. independent schools.

Patrick Bassett, president of the National Association of Independent Schools (NAIS), and other independent school leaders have begun to emphasize the need for greater attention to be given to professional learning in independent schools (Bassett, 2006; Duffy, Mattingly, & Randolph, 2006; Jorgenson, 2006). Jorgenson (2006) argued that "times have changed and we must acknowledge that workshops, speakers, and conferences are not defensible approaches for facilitating the development of our teachers in independent schools" (p. 4), while Bassett (2006) states that for "independent schools to prepare our students for the 21st century we must devote greater energy to providing ongoing, engaging learning opportunities for our teachers" (p. 5).

Perhaps the lack of urgency to address professional development practices in U.S. independent schools is due to several studies (Higher Education Research Institute, 2008; National Center for Education Statistics, 2007) demonstrating that U.S. independent school students have higher SAT and ACT test scores, and higher National Assessment of Education Progress (NAEP) scores, than their U.S. public school counterparts. These results have led some to question the need for improved professional learning in U.S. independent schools (Jorgenson,

2007), but data comparing U.S. independent school students with students in other countries leads to a different conclusion. For example, results from PISA indicated that mean scores for U.S. independent school students on these tests were slightly below the average for international students. Furthermore, of the 30 countries participating in the PISA testing, U.S. independent school students' average scores placed them outside of the top ten.

However, before U.S. independent schools can work to achieve the professional development reforms called for by Bassett and others, it is necessary to obtain accurate information about the current status of teacher learning in NAIS schools. As Evans (2002) says, "the ugly truth is often necessary to prod teachers and schools into action" (p. 149). So, *what* is happening regarding professional development in U.S. independent schools must be determined before examining *why* it is happening and *how* it can be changed. A large-scale study on current professional development practices in American independent schools is needed, and the present study addresses this problem. The specific research question for this study was:

1. To what extent are professional development practices in U.S. independent schools aligned with research-based principles of effective professional development?

Methods

Instrument Development

I designed a survey to collect information about the current status of teacher learning opportunities in NAIS schools. I developed the instrument for use with independent school division heads rather than independent school teachers because division heads have greater knowledge about all of the professional development opportunities in a school than individual teachers. The instrument designed was a two-part questionnaire called the *Independent School Teacher Development Inventory* (ISTDI).

Section I of the survey consisted of 40 Likert-type questions. Respondents answered these questions using a five-point Likert-type scale consisting of the following: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, and (5) Always. No clear agreement has emerged on the optimal number of response categories for reliability and validity, with some researchers arguing for seven categories (Cicchetti, Showalter, & Tyler, 1985; McKelvie, 1978) and others preferring five categories (Lissitz & Green, 1975; Neumann, 1979). I chose five options for the instrument in this study based on feedback during initial test item development which indicated that respondents could more easily discriminate among five categories than seven categories.

Section II of the survey collected demographic information about the division heads and their schools such as type of division head and division professional development budget size. The aim of this section was to explore connections between these demographic variables and current opportunities for professional learning in independent schools.

I selected the items in section I based on the specific research question of this study and six areas identified in the literature review. First, six questions were included to collect information about conventional professional development methods. The thirty-four remaining items were included to collect information about the five core characteristics of effective professional development with six items focused on content, eight on active learning, eight on coherence, seven on collective participation, and five on duration.

As reported in the validation study of the ISTDI (Murray, unpublished, 2010), I established appropriateness of item content in multiple ways. First, ten expert educational researchers evaluated preliminary items for content and clarity. Second, ten independent school educators reviewed preliminary items for content and clarity. Third, the revised survey items

were pilot-tested with 20 former independent school division heads to obtain feedback regarding the length and design of the survey, and the clarity of the questions.

The psychometric properties of the ISTDI were examined in a study by Murray (unpublished, 2010). Exploratory factor analysis procedures suggested that the ISTDI was comprised of five factors: traditional, content, coherence, active learning/collaboration, and duration. Confirmatory factor analysis provided additional support for a five factor structure of the ISTDI, with all three fit indices reaching the rigorous criteria set by Hu and Bentler (1999) for an excellent fit with the data: CFI = .953, TLI = .945, RMSEA = .057. Reliability coefficients for each of the five factors were above .90, ranging from .93 for the duration and content factors to .95 for the active learning/collaboration factor.

Participants

I electronically sent the ISTDI to all 3422 NAIS division heads, 1264 of them being heads of high schools, 1049 heads of middle schools, and 1109 heads of elementary schools. The response rate was 72%, with 2474 completed surveys. Of the completed surveys, 1023 (41.4%) were from high school heads, 674 (27.2%) were from middle school heads, and 777 (31.4%) and were from elementary school heads. Regarding experience, approximately 18.1% of the participants had between one and three years experience as a division head (n = 448), 31.9 % between four and seven years experience (n = 789), 29.7% percent between eight and eleven years experience (n = 734), and 20.3% twelve or more years of experience as a division head (n = 502). Selected demographic characteristics are presented in Table 5.

Table 5

Participant Demographic Characteristics

Division Head Type	*n*	1–3 Yrs Experience	4–7 Yrs. Experience	8–11 Yrs Experience	12 or more Yrs Experience
Upper School	1023	177	317	329	199
Middle School	674	118	216	189	151
Lower School	777	153	256	216	152
TOTAL	2474	448	789	734	502

Data Analysis Procedures

To address the research question, I analyzed the factor scores for the ISTDI and individual item scores using descriptive statistics such as percentages, means, and standard deviations. I used this data to determine the prevalence of both effective and ineffective professional development opportunities in independent schools, as well as compare the relative prevalence of one type of professional development opportunity with another one.

Results

Results indicated that professional learning opportunities in U.S. independent schools continue to consist primarily of conventional workshops, conferences, and short-term courses. The mean scores for all five items comprising the "tradition" factor were above 4.25 (see items 29–33 in Table 7), and the overall mean for the "tradition" factor was 4.50 (Table 6). Furthermore, for each of the five "tradition" factor items, over 90% of respondents indicated that their schools "frequently" or "always" utilized the specific traditional professional development methods described in the questions (see Table 8). For example, 95% of the respondents

indicated that their teachers “frequently” or “always” participate in workshops as part of the professional development program and 91% indicated that outside experts “frequently” or “always” conduct their professional development activities.

Results showed that research-based principles of effective professional development are not commonly being applied in U.S. independent schools. Scores for the four factors addressing research-based principles of effective professional learning (“content”, “coherence”, “duration”, “active learning/collaboration”) were lower than those for the “traditional” factor items. The mean scores for the items comprising the “duration” and “active learning/collaboration” factors were particularly low. The mean scores for all of the “duration” factor items (see items 35–40 in Table 7) were under 1.50, and the mean scores for all of the “active learning/collaboration” items were under 2.30 (see items 1–15 in Table 7). The mean for all items comprising the “duration” factor was 1.42 (Table 6) and the mean for all items comprising the “active learning/ collaboration” factor was 2.17 (Table 6). For each of the six “duration” factor items over 90% of the respondents indicated their professional learning opportunities “never” or “seldom” were characterized by the specific principles described in the questions (see Table 8). For example, 91% of the respondents reported that teachers “seldom” or “never” spend more than one hour each week engaged in professional development activities. For each of the fifteen “active learning/collaboration” factor items, over 79% of the respondents reported their professional learning activities “never” or “seldom” included the active learning/collaborative characteristics described in the questions (Table 8). For example, 80% of respondents indicated that teachers at their schools “never” or “seldom” plan instruction together.

Table 6

ISTDI Factor Descriptive Statistics

Factor	All Participants M (SD)
Factor 1: Active Learning/ Collaboration	2.17 (.70)
Factor 2: Content Focus	3.47 (.71)
Factor 3: Coherence	2.92 (.76)
Factor 4: Traditional	4.50 (.68)
Factor 5: Duration	1.42 (.81)

Note: M = mean; SD = standard deviation

Table 7

Descriptive Statistics for the ISTDI

Item		All Participants M (SD)
1.	Professional development activities include opportunities to observe and critique other teachers.	2.11 (.69)
2.	Professional development provides opportunities for teachers to collaboratively examine and discuss student work.	2.22 (.78)
3.	Teachers have opportunities to apply and practice new skills and knowledge during professional development activities.	2.16 (.70)
4.	Professional development activities include peer coaching.	2.08 (.67)
5.	Teachers have opportunities to practice skills gained during professional development with colleagues prior to integrating skills into the classroom.	2.13 (.69)
6.	We provide formal training for teachers on how to effectively collaborate.	2.07 (.68)
7.	Soon after returning from offsite professional development teachers formally share their learning with their colleagues.	2.26 (.79)
8.	Research based best practices inform our professional development activities.	2.25 (.77)
9.	Teachers plan instruction together.	2.23 (.89)
10.	We select/design professional development activities based on an analysis of student needs.	2.18 (.66)
11.	We provide structured support for teachers implementing new skills until they become a natural part of their classroom instruction.	2.12 (.63)
12.	Our professional development activities take place on weekdays between 8:00 am and 3:00 pm.	2.08 (.65)

(table continues)

Table 7 (continued)

Item	All Participants M (SD)
13. Teachers participate in setting the goals of the professional development program.	2.19 (.76)
14. Beginning teachers have formal opportunities to work with mentor teachers.	2.20 (.82)
15. Teachers meet by grade level to discuss instruction and student learning.	2.28 (.88)
16. Teachers meet by content area to discuss instruction and student learning.	3.48 (.73)
17. We design professional development to help teachers integrate technology into their content.	3.45 (.72)
18. Professional development activities focus on specific pedagogical skills.	3.47 (.72)
19. Professional development is focused on helping teachers understand how students learn best in specific content areas.	3.41 (.62)
20. We design professional development to help teachers learn instructional methods for their specific discipline.	3.52 (.68)
21. Professional development is focused on teachers understanding the content of their discipline.	3.39 (.70)
22. Our personnel conduct our professional development activities.	2.81 (.85)
23. Professional development activities relate directly to our institutional goals.	2.96 (.86)
24. Teacher professional development is part of our school improvement plan.	3.01 (.90)
25. Professional development activities are aligned with the school curriculum.	2.93 (.87)
26. Professional development activities occur onsite at our school.	2.90 (.81)
27. Specific teacher needs inform the design of our professional development activities.	3.03 (.77)
28. We involve teachers in designing the activities of our professional development program.	2.88 (.72)
29. Outside experts conduct our professional development activities.	4.49 (.77)
30. Teachers attend conferences as part of the professional development program.	4.59 (.71)
31. Our school pays outside consultants to present professional development activities to our teachers.	4.43 (.80)
32. Teachers participate in workshops as part of our professional development program.	4.62 (.60)
33. Teachers take courses as part of the professional development program.	4.38 (.85)
34. Teachers are granted sabbaticals as part of the professional development program.	3.10 (1.62)
35. Over the course of the school year teachers are engaged in planned professional learning activities for more than 40 hours.	1.44 (.87)
36. Time is scheduled each week for teachers to discuss what they learn from professional development activities with colleagues.	1.37 (.72)
37. Professional development activities occur every week.	1.48 (.74)
38. Teachers spend more than one hour each week engaged in professional development activities.	1.42 (.81)
39. Teacher study groups meet each week as part of our professional development activities.	1.34 (.83)
40. Professional development activities are built into the regular work day of teachers.	1.52 (.82)

Note: M = mean, SD = standard deviation

Mean scores for the "coherence" and "content" factor items were higher than scores for the "duration" and "active learning/collaboration" factor items. The mean scores for the "coherence" factor items (see items 22–28 in Table 7) ranged between 2.88 and 3.03 and the

mean for all of the "coherence" items was 2.92 (Table 6). While over 50% of respondents indicated that their professional development programs "sometimes" included the characteristics of coherence described in these items (Table 8), results also indicated that over 30% of respondents reported that their schools "seldom" or "never" included these characteristics of coherence in their professional development programs. Of the four factors addressing principles of effective professional learning ("content", "coherence", "duration", "active learning/ collaboration"), scores for the "content" factor items were the highest. The six items comprising the "content" factor ranged between 3.39 and 3.52 (see items 16–21 in Table 7) and the mean for all items making up the "content" factor was 3.47 (Table 6). Additionally, results indicated that over 50% of respondents reported that their professional development activities "frequently" or "always" have the types of content focus described in the items making up this factor (Table 8). For example, 52% of the respondents reported that their professional development activities were "frequently" or "always" centered on helping teachers better understand the content of their discipline, and 53% of respondents reported that their professional development activities were "frequently" or "always" centered on teachers learning instructional methods for their specific content area.

Table 8

Response Frequencies on the ISTDI

Item	% of Respondents Reporting "Frequently" or "Always"	% of Respondents Reporting "Sometimes"	% of Respondents Reporting "Never" or "Seldom"
1. Professional development activities include opportunities to observe and critique other teachers.	6.02	9.89	84.07
2. Professional development provides opportunities for teachers to collaboratively examine and discuss student work.	7.13	10.79	81.88
3. Teachers have opportunities to apply and practice new skills and knowledge during professional development activities.	5.54	11.25	83.26
4. Professional development activities include peer coaching.	3.48	12.09	84.43
5. Teachers have opportunities to practice skills gained during professional development with colleagues prior to integrating skills into the classroom.	4.96	9.38	85.66
6. We provide formal training for teachers on how to effectively collaborate.	3.86	7.90	88.24
7. Soon after returning from offsite professional development teachers formally share their learning with their colleagues.	8.24	10.99	80.76
8. Research based best practices inform our professional development activities.	9.40	11.39	79.21
9. Teachers plan instruction together.	7.90	11.76	80.34
10. We select/design professional development activities based on an analysis of student needs.	7.05	10.31	82.64
11. We provide structured support for teachers implementing new skills until they become a natural part of their classroom instruction.	3.32	10.54	86.14
12. Our professional development activities take place on weekdays between 8:00am and 3:00pm.	4.97	10.11	84.93
13. Teachers participate in setting the goals of the professional development program.	7.59	9.95	82.46
14. Beginning teachers have formal opportunities to work with mentor teachers.	9.15	8.42	82.42
15. Teachers meet by grade level to discuss instruction and student learning.	11.75	8.32	79.93
16. Teachers meet by content area to discuss instruction and student learning.	52.94	39.74	7.33
17. We design professional development to help teachers integrate technology into their content.	51.83	40.66	7.51
18. Professional development activities focus on specific pedagogical skills.	52.75	38.83	8.44
19. Professional development is focused on helping teachers understand how students learn best in specific content areas.	50.27	42.31	8.42

(table continues)

Table 8 (continued)

Item	% of Respondents Reporting "Frequently" or "Always"	% of Respondents Reporting "Sometimes"	% of Respondents Reporting "Never" or "Seldom"
20. We design professional development to help teachers learn instructional methods for their specific discipline.	50.55	40.62	8.82
21. Professional development is focused on teachers understanding the content of their discipline.	52.62	39.78	7.60
22. Our personnel conduct our professional development activities.	11.20	54.70	34.15
23. Professional development activities relate directly to our institutional goals.	17.72	51.72	30.56
24. Teacher professional development is part of our school improvement plan.	18.26	50.55	31.18
25. Professional development activities are aligned with the school curriculum.	15.60	52.66	31.74
26. Professional development activities occur onsite at our school.	16.27	51.54	32.19
27. Specific teacher needs inform the design of our professional development activities.	13.74	54.95	31.32
28. We involve teachers in designing the activities of our professional development program.	15.87	51.11	33.02
29. Outside experts conduct our professional development activities.	90.78	6.51	2.71
30. Teachers attend conferences as part of the professional development program.	94.69	4.40	0.92
31. Our school pays outside consultants to present professional development activities to our teachers.	90.24	7.18	2.58
32. Teachers participate in workshops as part of our professional development program.	95.47	3.99	0.54
33. Teachers take courses as part of professional development program.	90.11	5.86	4.03
34. Teachers are granted sabbaticals as part of the professional development program	55.23	5.68	38.09
35. Over the course of the school year teachers are engaged in planned professional learning activities for more than 40 hours.	4.04	4.23	91.73
36. Time is scheduled each week for teachers to discuss what they learn from professional development activities with colleagues.	3.30	4.22	92.48
37. Professional development activities occur every week.	2.94	4.95	92.11
38. Teachers spend more than one hour each week engaged in professional development activities.	2.57	6.23	91.21

(table continues)

Table 8 (continued)

Item	% of Respondents Reporting "Frequently" or "Always"	% of Respondents Reporting "Sometimes"	% of Respondents Reporting "Never" or "Seldom"
39. Teacher study groups meet each week as part of our professional development activities.	3.12	6.96	90.03
40. Professional development activities are built into the regular work day of teachers.	3.26	6.69	90.05

Discussion

The ineffectiveness of conventional professional development methods to effect teacher change and improved student learning has led to a shift in focus from professional development being viewed as something that is done to teachers, to a new paradigm of professional development where teachers actively participate in their professional growth and learning, and where learning opportunities are embedded into the daily work of teachers (Clarke & Hollingsworth, 2002). It has also led to extensive research on what constitutes effective professional development and a consensus is emerging about the key characteristics of professional development that are critical to improving teacher knowledge and instructional practices, and increasing student achievement. These characteristics of effective professional development include collaborative work groups, a focus on pedagogical content knowledge, alignment with school improvement goals, being sustained over time, and using active methods of teacher learning (Darling-Hammond et al., 2009; Desimone, 2009).

As Evans (2002) has argued "schools must be forced to look at the disparity between their current practices and best practices before any meaningful change can occur" (p.45). For U.S. independent schools to be prompted to work towards establishing more effective professional development practices, it is necessary to obtain accurate information about the

current status of teacher learning in independent schools. The present study was conducted to address this need and was guided by the following research question:

1. To what extent are professional development practices in U.S. independent schools aligned with research-based principles of effective professional development?

This section will discuss this question in light of the findings of this study, will suggest future research directions in teacher professional learning, and will examine the implications of this study for independent school leaders and practitioners.

The Status of Teacher Learning Opportunities in U.S. Independent Schools

The findings in this study are similar to a recent national study assessing the status of teacher professional learning in U.S. public schools (Darling-Hammond et al., 2009). Results indicate that a significant gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development. Despite extensive research demonstrating the ineffectiveness of conventional professional development approaches (Borko, 2004; Garet et al., 2001; Webster-Wright, 2009), and despite calls from NAIS president Patrick Bassett (2006) to transform the way independent school teachers grow in their profession, results indicate that independent school teacher professional learning continues to consist primarily of traditional workshops, speakers and conferences. Further, findings reveal that independent schools rarely apply research-based principles of effective professional development. For example, results indicate that independent school professional learning activities rarely extend over time, rarely connect to teacher or student needs, rarely involve teacher collaboration and active teacher learning, and rarely focus on helping teachers understand how students best learn specific subject matter.

Why have professional learning practices not altered in response to research findings and pleas from NAIS leadership? Many possible reasons exist. They range from the problematic nature of a bureaucratic work context for many teachers (Sandholtz & Scribner, 2006; Wood, 2007) through professional issues such as time pressures and stress at work (Hargreaves, 1997; Hochschild, 1997) to problems with introducing change in such change-weary times (Evans, 2002; Fullan, 2003). Further, in the teaching profession, the historical connection between teaching and learning may reinforce the assumption that significant learning requires external direction. In addition, considerable resources have been invested in established structures for providing professional development activities for teachers. Finally, and perhaps most significantly, independent schools often have a culture where teachers work in isolation and are insulated from opportunities to engage in and demonstrate professional learning and growth (Dronkers & Robert, 2007; Zepeda, 2008). Efforts to close the gap between research-based best practices and current practices must begin by creating a culture where continual job-embedded professional learning becomes part of the culture of independent schools.

Future Research Directions

The findings of this study are important because for the first time independent school leaders have an accurate picture of the learning opportunities available to their teachers. However, if U.S. independent schools are to be able to close the gap between current professional learning practices and research-based best practices of teacher professional learning, a number of related questions require further exploration. First, it is important to know if, as is true in U.S. public schools (Darling-Hammond et al., 2009), there are differences in professional development practices across lower, middle, and upper divisions in U.S. independent schools. Why do any differences exist and how can this information assist efforts to close the gap across

all divisions? Second, why does such a large gap exist between current professional learning practices and research based best practices of professional teacher learning in U.S. independent schools? Are cultural traditions of teacher isolation the primary reason? Is lack of knowledge about more effective practices part of the problem? Further, are there structural obstacles, such as school schedules, which contribute to this gap? Third, how can U.S. independent schools build the organizational capacity to provide more effective types of professional learning opportunities for their teachers? What specific types of organizational features are needed to support and facilitate effective professional learning in independent schools? Fourth, how can independent schools monitor and evaluate the quality of their professional development programs to ensure they are positively influencing teacher learning, teacher instruction, and student performance? Finally, given that resources for professional development in independent schools has shrunk in recent years, it is important to learn if professional development practices vary across schools with different professional development budget sizes. Such data can help independent schools better understand the best way to target resources in terms of content, delivery, and teachers.

Implications for Independent School Leaders and Teachers

NAIS president Patrick Bassett has been emphasizing that independent schools must devote greater attention to how they provide professional development for their teachers, arguing that "professional development practices in our schools should be modeled after other professions where learning is continuous and embedded into the daily work of the job" (Bassett, 2006, p. 4). The findings of this study confirm Bassett's concerns about the professional learning practices of independent schools and highlight the need for independent school leaders and teachers to take action to close the gap between current practices and the effective

professional learning practices called for by Bassett and supported by over a decade of research (Desimone, 2009; Supovitz & Turner, 2000; Webster-Wright, 2009).

However, before independent schools can move towards establishing more effective professional learning opportunities for their teachers, they must work to gain a broader understanding about the gap between current professional development practices and research-based best practices. Specifically, they need to learn if the gap is similar across all divisions and professional development budget sizes. Armed with this information, independent school leaders will be able to move to examining *why* a gap exists between current and best practices and *how* independent schools can move closer to the standards established for effective professional development.

CHAPTER VI. MANUSCRIPT 3: THE CURRENT STATE OF PROFESSIONAL DEVELOPMENT IN U.S. INDEPENDENT SCHOOLS: IMPLICATIONS FOR INDEPENDENT SCHOOL LEADERS AND TEACHERS

Abstract

Research on effective professional development has begun to create a consensus about key principles and characteristics which lead to improvements in teachers' knowledge and instructional practice, as well as improved student learning outcomes. While improving professional development practices in U.S. public schools has become a priority for researchers and policymakers, professional development practices in independent schools have gone unexamined. To address this problem, a national study (Murray, unpublished, 2010) was conducted to assess the extent to which professional development opportunities in independent schools align with what research says about effective professional development practices. Results indicated that a large gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development. For independent schools to fully understand why this gap exists, more detailed information about professional development practices in independent schools is needed. The present study addressed this need by conducting a national survey to determine if the gap is consistent across the different divisions of independent schools and the different professional development budget sizes of independent schools. Results indicated that a small but statistically significant gap exists between the professional learning opportunities available to independent lower school teachers and independent upper school teachers, but few statistically significant differences existed across

independent schools with different professional development budget sizes. Implications for independent school leaders are discussed with an emphasis on examining why a gap between current practices and research-based principles of effective professional learning exists and how independent schools can move closer to the standards established for effective professional development.

Introduction

High-quality professional development is a central feature of virtually every modern proposal for educational reform because educators and policy-makers understand that good teachers and excellent teaching are essential features of any effort to improve schools. Proposed professional development programs share a common purpose: to "alter the professional practices, beliefs, and understanding of school persons toward an articulated end" (Guskey, 2002, p. 381). In most cases, that end is improved student learning. Professional development programs are systematic efforts to enhance the knowledge, attitudes, and skills of teachers, and in turn elevate the learning outcomes of students (Youngs & King, 2002).

Research on effective professional development has begun to create agreement about the fundamental characteristics of learning opportunities that can influence teachers' knowledge, attitudes, and practices (Desimone, 2009; Whitcomb, Borko, & Liston, 2009). Three national studies (Blank, de las Alas, & Smith, 2008; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007) have investigated the extent to which teachers in U.S. public schools have access to effective professional learning opportunities, but professional development practices in U.S. independent schools have not been examined.

Independent schools, those schools not dependent upon government funding for their operations, are beginning to recognize the need for improved professional development programs. Like their public school colleagues, independent school leaders and policymakers are calling for improved professional learning opportunities for their teachers and are placing teacher learning at the core of efforts to improve their schools (Bassett, 2007). However, for U.S. independent schools to align teacher learning opportunities with research-based standards for effective professional learning, a clear picture of the current state of professional development in independent schools is required. To address this research need, a national study was conducted (Murray, unpublished, 2010) to assess the extent to which professional development opportunities in independent schools are consistent with research-based principles of effective teacher learning. Findings from this study indicated that a significant gap exists between current professional development opportunities in U.S. independent schools and research-based principles of effective teacher professional learning.

The national study by Murray (unpublished, 2010) was important because for the first time independent school leaders had an accurate picture of the learning opportunities available to their teachers. However, for independent schools to fully understand why the gap between current professional learning practices and research-based best practices of teacher professional learning exists, and how this gap can be closed, more detailed information about professional development practices in independent schools is needed. Specifically, it is important to know if, as is true in U.S. public schools (Darling-Hammond et al., 2009), there are differences in professional development practices across divisions in U.S. independent schools. In addition, it is important to learn if there are differences across independent schools with different professional development budget sizes. This paper reports on a national study designed to

address these needs, with particular emphasis on the implications of the findings for independent school teachers, leaders, and policymakers.

The Independent School Context

An independent school is not dependent upon the government for financing its operations and it is not reliant upon taxpayer contributions. Rather, it is funded by tuition fees, gifts, and the investment yield of an endowment. It is governed by a board of trustees that is selected independently and a system of governance that maintains its independent operation. While independent schools may have a religious affiliation, the precise meaning of the term excludes parochial and other private schools that are financially dependent upon or subordinate to outside organizations.

There are over 115,000 schools in the United States, and 28,000 of them are private schools (Snyder, Dillow, & Hoffman, 2008). Nearly 1500 of these private schools are independent schools, and 1215 of these independent schools (Snyder et al., 2008) are members of the National Association of Independent Schools (NAIS). Of the over 50 million children attending school in the U.S., almost 6 million attend private schools, and over 500,000 attend NAIS member independent schools (Snyder et al., 2008).

Teachers with demonstrated expertise in a specific academic discipline, combined with a degree from a nationally revered institution, have traditionally been valued much more by independent schools than teachers with training in instructional methods. The appeal of "academic freedom" has drawn many teachers to independent schools, where teacher licensing, prescribed curricula, lesson planning, and other perceived bureaucratic obstacles have not been prevalent (Jorgenson, 2006). Perhaps even more than in public schools, the stand-and-deliver model of teaching and learning has been the norm in independent schools. Further, independent

schools have traditionally been characterized by a culture in which teachers are isolated from one another in separate classrooms and are rarely expected to participate in their own learning and growth (Dronkers & Robert, 2007; Trickett, Castro, Trickett, & Schaffner, 1982).

Patrick Bassett, president of NAIS, and other independent school leaders have specified three reasons why this traditional independent school culture must change, particularly in the area of teacher professional learning (Bassett, 2007, Duffy, Mattingly, & Randolph, 2006; Jorgenson, 2006). First, research on teaching and learning has established that an exclusive reliance on the stand-and-deliver model of teaching is not the most effective method of instruction for helping students understand concepts on a deep level (Bransford, Brown, & Cocking, 2000; Wiggins & McTighe,2005). As Jorgenson (2006) argues, "research-based, classroom-proven best practice teaching methods are too compelling for independent school teachers and leaders to continue to ignore" (p. 4).

Second, like students who attend public schools, independent school students come with more learning challenges than ever before and this trend shows no sign of reversing (Evans, 2004). The changing needs of independent school students require independent school teachers to adapt their methods to a more diverse group of students, to expand their repertoire beyond purveyors of information to become facilitators, co-investigators, and guides. Duffy and her colleagues (2006) emphasize that "academic freedom has its place, of course, but we know too much about what is best for our students to hide behind tradition" (p. 3).

Third, the shift from an industrial economy to a global information economy necessitates instructing students differently than in the past. "The traditional independent school model of dispensing information in isolation from other subject areas is increasingly obsolete as way to prepare students for our world" (Jorgenson, 2006, p. 2).

For independent school teachers to simultaneously recognize these dynamics, determine how to address them through curricular change, and then implement these changes in meaningful, sustainable ways, is a daunting task. Clearly, ongoing effective professional development opportunities will be needed to help independent school teachers make these changes. As Bassett (2006) states, "our professional development practices must change to engage teachers in highly targeted research-and-design work whose intent is to transform teaching and learning within the school" (p. 2).

Principles of Effective Professional Learning

For years the primary form of professional development available to both public school and independent school teachers has been "in-service training" consisting of workshops, speakers, short-term courses, and conferences (Bassett, 2006; Borko, 2004). Researchers have demonstrated the ineffectiveness of such traditional approaches to teacher learning (Guskey, 1986; Ingvarson, Meiers, & Beavis, 2005; Supovitz & Turner, 2000), concluding that they rarely bring about improvements in teacher knowledge and instruction, and student achievement.

The clear failure of conventional professional development methods has led to a new definition of professional development and extensive research aimed at identifying the key characteristics of effective professional development. It is now accepted that professional learning experiences can range from formal, structured activities on in-service days, to more informal discussions among teachers about instruction methods, embedded in the regular work day of teachers (Desimone, 2009). Further, a consensus is being built regarding the fundamental characteristics of professional development that are essential to increasing teacher knowledge and skills, and elevating student achievement. Key features of effective teacher professional learning include active teacher learning in collaborative work groups (Murray, unpublished,

2010), a focus on pedagogical content knowledge (Desimone, 2009), connection with school improvement goals (Guskey, 2003), and duration over time (Webster-Wright, 2009).

Purpose of the Study

Research on effective teacher professional learning has led to a new view of teacher professional development; one based on evidence which specifies the types of experiences that build teacher knowledge and skills and result in improved student learning. With this information available and with a national emphasis on teacher professional learning being necessary to improve the quality of education in our country, there is a growing expectation that professional development practices in U.S. public schools should be aligned with many of these quality guidelines. However, data from national studies (Birman, LeFloch, Wayne, & Yoon, 2007; Blank, de las Alas, & Smith, 2007; Darling-Hammond et al., 2009; Garet et al., 2002) provides evidence that professional development opportunities in U.S. public schools do not meet standards for effective teacher professional learning. Results show that professional development in U.S. schools is often of short duration, includes little emphasis on content knowledge, does not consider teacher needs, is rarely collaborative, is rarely viewed as being useful by the teachers experiencing it (Darling-Hammond et al., 2009), and continues to consist primarily of sporadic workshops and conferences.

Like public schools, professional development programs for independent school teachers have historically been characterized by "in-service training" consisting of workshops, speakers, and conferences (Bassett, 2006; Jorgenson, 2006). However, while educators, policymakers, and researchers have emphasized the necessity of improving professional development practices in our nation's public schools, they have ignored U.S. independent schools. No studies have been done on professional development practices in independent schools and, perhaps because many

assume there is no need for such research (Wilson, 2006), there is no call from the public or government for improving the professional learning opportunities for independent school teachers. However, Pat Bassett argues that such research is needed, stating that "greater attention must be given to professional development practices in independent schools if we are to realize the kinds of substantive change that is needed" (Bassett, 2007, p. 3).

Recent studies by the National Center for Education Statistics (2007) and the Higher Education Research Institute (2008) found that U.S. independent school students have higher SAT and ACT test scores, and higher National Assessment of Education Progress (NAEP) scores, than U.S. public school students and have led some to question the need for reforms in professional development in U.S. independent schools (Jorgenson, 2007). However, research comparing U.S. independent school students with international students supports Bassett's calls for reform. For example, although U.S. independent school students scored significantly higher on the PISA math and science assessments than U.S. public school students, their mean scores on these tests were slightly below those of international students. In addition, of the 30 countries participating in the PISA testing, U.S. independent school students' average scores placed them outside of the top ten.

However, it is unlikely that the PISA data alone will prompt U.S. independent schools to alter the professional learning opportunities they provide for their teachers. Additional compelling information will be needed to disturb the inertia inherent in a professional development culture built on decades of teacher isolation, workshops and conferences (Jorgenson, 2007). For U.S. independent schools to work to achieve the professional development reforms called for by Bassett and others, it is necessary to confront them with the disparity between their current traditional professional development practices and research-based

best practices of teacher professional learning. Murray (unpublished, 2010) addressed this need by conducting a national study, analogous to the research examining professional development in U.S. public schools (Darling-Hammond et al., 2009), on current professional development practices in U.S. independent schools. Murray (unpublished, 2010) argued that what is happening in independent schools must be documented before they will mobilize to bring about substantive changes in teacher professional learning opportunities.

Findings from Murray's study (unpublished, 2010) confirmed that a large gulf exists between current professional development opportunities in U.S. independent schools and research-based principles of effective teacher professional learning, and provided an essential first step in efforts to transform the professional learning culture and practices of independent schools. However, before U.S. independent schools can move to examining why this gulf exists and how it can be closed, additional information about the current state of professional development in independent schools is needed.

First, it is important to learn if the gap between current practices and best practices is similar across the different divisions of independent schools (elementary schools, middle schools, and high schools). Significant differences were found across divisions in the recent national study of professional development in U.S. public schools (Darling-Hammond et al., 2009), with professional learning opportunities in elementary schools being much more aligned with research-based principles of effective teacher learning than either middle schools or high schools. If a similar pattern exists in U.S. independent schools it would have important implications for how independent school leaders work to enact professional development reforms. Second, it is important to learn if the gap between current practices and best practices is related in any way to the amount of money schools commit to the professional learning of their

teachers. In the recent study of U.S. public schools (Darling-Hammond et al., 2009), the duration of professional learning opportunities and level of teacher collaboration were found to be higher in schools with significantly higher professional development budgets, and this information is informing how public school leaders and policy makers most effectively and efficiently implement the limited funds available for professional development. Professional development budgets have also been shrinking in independent schools, making it crucial to understand how professional development size is connected to the quality of teacher professional learning opportunities.

The present study addressed these two needs for more specific information about the professional development practices of U.S. independent schools. The specific research questions addressed were:

1. To what extent do differences exist in professional development practices in U.S. independent schools across divisions (elementary schools, middle schools and high schools)?

2. To what extent do differences exist in professional development practices in U.S. independent schools across professional development budget size?

The primary focus of this paper is to discuss the implications of the findings for U.S. independent school teachers and leaders. With detailed information about the professional learning opportunities available to their teachers, independent school leaders will be in position to assess the cultures in which teachers learn and work, and determine how to improve the professional development programs in their schools. More specifically, independent school leaders will be able to begin to evaluate why gaps exist between current practices and best practices, what things need to be changed, and how to begin to change them.

Methods

Instrument Development

I designed a survey to collect information about the current status of teacher learning opportunities in NAIS schools. The instrument designed was a two-part questionnaire called the *Independent School Teacher Development Inventory* (ISTDI). I developed the ISTDI for use with independent school division heads rather than independent school teachers because division heads have greater knowledge about all of the professional development opportunities in a school than individual teachers.

Section I of the survey consisted of 40 Likert-type questions. These questions were answered using a five-point Likert-type scale consisting of the following: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, and (5) Always. Six areas identified in the literature review served as the foundation for the items in section I. I included six questions to collect information about conventional professional development methods. I selected the thirty-four remaining items to collect information about the five core characteristics of effective professional development with six items focused on content, eight on active learning, eight on coherence, seven on collective participation, and five on duration.

Section II of the survey collected demographic information about the division heads and their schools such as type of division head, years of experience as a division head, and professional development budget size for the division. The aim of this section was to collect information that would explore connections between the division heads and their schools and current opportunities for professional learning in independent schools.

Murray examined the psychometric properties of the ISTDI in an earlier study (unpublished, 2010). Exploratory factor analysis procedures suggested that the ISTDI was

comprised of five factors: traditional, content, coherence, duration, and active learning/ collaboration. Confirmatory factor analysis was also performed and provided additional support for a five factor structure of the ISTDI as all three fit indices reached the rigorous criteria set by Hu and Bentler (1999) for an excellent fit with the data: CFI = .953, TLI = .945, RMSEA = .057. Reliability coefficients for each of the five factors were above .90, ranging from .93 for the duration and content factors to .95 for the active learning/collaboration factor.

Participants

The researcher electronically sent the ISTDI to all 3422 NAIS division heads, 1264 of them being division heads of high schools, 1049 division heads of middle schools, and 1109 division heads of elementary schools. The response rate was 72%, with 2474 completed surveys. Of the completed surveys, 1023 (41.4%) were from high school division heads, 674 (27.2%) were from middle school division heads, and 777 (31.4%) and were from elementary school division heads. Regarding experience, approximately 18.1% of the participants had between one and three years experience as a division head (n = 448), 31.9 % between four and seven years experience (n = 789), 29.7% percent between eight and eleven years experience (n = 734), and 20.3% twelve or more years of experience as a division head (n = 502). Selected demographic characteristics of the participant population are presented in Table 9.

Table 9

Participant Demographic Characteristics

Division Head Type	*n*	1–3 Yrs. Experience	4–7 Yrs. Experience	8–11 Yrs. Experience	12 or more Yrs. Experience
Upper School	1023	177	317	329	199
Middle School	674	118	216	189	151
Lower School	777	153	256	216	152
TOTAL	2474	448	789	734	502

Data Analysis Procedures

To address research question one, I used descriptive statistics such as percentages, means, and standard deviations to analyze factor scores and individual item scores for the ISTDI for the three division types. In addition, I conducted multiple one-way ANOVAs to determine whether statistically significant differences existed between the three division types on factor scores. As recommended by Wright and London (2009), I employed the Tukey post hoc procedure because it "controls Type I errors very well and has more power than Bonferroni when sample size is large" (p. 57).

To address research question two, I used descriptive statistics such as means and standard deviations to analyze factor scores for the five professional development budget categories. Also, I conducted multiple one-way ANOVAs to determine whether statistically significant differences existed on factor scores between schools with different professional development budget sizes.

Results

Professional Learning Practices Across Independent School Divisions

Mean scores on the 40 ISTDI items for each of the three types of division heads are presented in Table 11 and mean scores for the five factors of the ISTDI for each of the three types of division heads are shown in Table 10. To determine whether statistically significant differences existed between the three division types on factor scores, five one-way ANOVAs were conducted. Results showed multiple significant differences in professional development practices across the different divisions of U.S. independent schools, with the greatest differences existing between lower schools and upper schools. The "content" factor was the only factor where significant differences across the divisions were not found, $F(2,2474) = 1.34$, $p = .26$, and the effect size as indicated by eta square was small (.027).

Table 10

ISTDI Factor Descriptive Statistics Across Division Heads

Factor	All Participants M (SD)	Upper School Division Heads M (SD)	Middle School Division Heads M (SD)	Lower School Division Heads M (SD)
Factor 1: Active Learning/ Collaboration	2.17 (.70)	2.03 (.62)	2.26 (.71)	2.36 (.78)
Factor 2: Content Focus	3.47 (.71)	3.44 (.65)	3.48 (.69)	3.50 (.73)
Factor 3: Coherence	2.92 (.76)	2.77 (.76)	3.07 (.74)	3.15 (.75)
Factor 4: Traditional	4.50 (.68)	4.58 (.55)	4.46 (.77)	4.30 (.82)
Factor 5: Duration	1.42 (.81)	1.24 (.57)	1.58 (.89)	1.65 (.92)

Note: M = mean; SD = standard deviation

Table 11

Descriptive Statistics for the ISTDI

Item	All Participants M (SD)	Upper School Division Heads M (SD)	Middle School Division Heads M (SD)	Lower School Division Heads M (SD)
1. Professional development activities include opportunities to observe and critique other teachers.	2.11 (.69)	2.02 (.67)	2.22 (.72)	2.29 (.71)
2. Professional development provides opportunities for teachers to collaboratively examine and discuss student work.	2.22 (.78)	2.07 (.79)	2.30 (.73)	2.44 (.81)
3. Teachers have opportunities to apply and practice new skills and knowledge during professional development activities.	2.16 (.70)	2.02 (.76)	2.24 (.72)	2.36 (.62)
4. Professional development activities include peer coaching.	2.08 (.67)	2.00 (.71)	2.13 (.64)	2.19 (.68)
5. Teachers have opportunities to practice skills gained during professional development with colleagues prior to integrating skills into the classroom.	2.13 (.69)	2.03 (.74)	2.21 (.71)	2.20 (.66)
6. We provide formal training for teachers on how to effectively collaborate.	2.07 (.68)	1.94 (.61)	2.22 (.77)	2.18 (.66)
7. Soon after returning from offsite professional development teachers formally share their learning with their colleagues.	2.26 (.79)	2.07 (.81)	2.32 (.76)	2.45 (.78)
8. Research based best practices inform our professional development activities.	2.25 (.77)	2.14 (.75)	2.31 (.79)	2.37 (.77)
9. Teachers plan instruction together.	2.23 (.89)	1.72 (.78)	2.20 (.72)	2.78 (.81)
10. We select/design professional development activities based on an analysis of student needs.	2.18 (.66)	2.15 (.68)	2.21 (.69)	2.19 (.64)
11. We provide structured support for teachers implementing new skills until they become a natural part of their classroom instruction.	2.12 (.63)	2.14 (.69)	2.09 (.61)	2.16 (.66)
12. Our professional development activities take place on weekdays between 8:00 am and 3:00 pm.	2.08 (.65)	1.96 (.71)	2.18 (.68)	2.31 (.62)
13. Teachers participate in setting the goals of the professional development program.	2.19 (.76)	2.13 (.70)	2.22 (.80)	2.23 (.77)
14. Beginning teachers have formal opportunities to work with mentor teachers.	2.20 (.82)	2.21 (.84)	2.24 (.80)	2.17 (.76)
15. Teachers meet by grade level to discuss instruction and student learning.	2.28 (.88)	1.79 (.87)	2.33 (.79)	2.66 (.83)
16. Teachers meet by content area to discuss instruction and student learning.	3.48 (.73)	3.51 (.70)	3.43 (.71)	3.46 (.75)
17. We design professional development to help teachers integrate technology into their content.	3.45 (.72)	3.39 (.67)	3.47 (.79)	3.51 (.70)

(table continues)

Table 11 (continued)

Item	All Participants M (SD)	Upper School Division Heads M (SD)	Middle School Division Heads M (SD)	Lower School Division Heads M (SD)
18. Professional development activities focus on specific pedagogical skills.	3.47 (.72)	3.44 (.75)	3.48 (.69)	3.49 (.72)
19. Professional development is focused on helping teachers understand how students learn best in specific content areas.	3.41 (.62)	3.44(.68)	3.40 (.61)	3.38 (.63)
20. We design professional development to help teachers learn instructional methods for their specific discipline.	3.52 (.68)	3.47 (.73)	3.55 (.66)	3.58 (.70)
21. Professional development is focused on teachers understanding the content of their discipline.	3.39 (.70)	3.40 (.77)	3.36 (.66)	3.38 (.71)
22. Our personnel conduct our professional development activities.	2.81 (.85)	2.73 (.85)	2.87 (.82)	2.92 (.87)
23. Professional development activities relate directly to our institutional goals.	2.96 (.86)	2.75 (.89)	3.07 (.85)	3.11 (.82)
24. Teacher professional development is part of our school improvement plan.	3.01 (.90)	2.79 (.91)	3.01 (.84)	3.20 (.88)
25. Professional development activities are aligned with the school curriculum.	2.93 (.87)	2.83 (.89)	3.02 (.83)	3.09 (.80)
26. Professional development activities occur onsite at our school.	2.90 (.81)	2.80 (.85)	3.06 (.73)	3.13 (.75)
27. Specific teacher needs inform the design of our professional development activities.	3.03 (.77)	2.77 (.82)	2.99 (.75)	3.18 (.74)
28. We involve teachers in designing the activities of our professional development program.	2.88 (.72)	2.78 (.75)	3.05 (.67)	3.14 (.77)
29. Outside experts conduct our professional development activities.	4.49 (.77)	4.60 (.63)	4.47 (.79)	4.34 (.84)
30. Teachers attend conferences as part of the professional development program.	4.59 (.71)	4.64 (.56)	4.56 (.77)	4.53 (.81)
31. Our school pays outside consultants to present professional development activities to our teachers.	4.43 (.80)	4.52 (.68)	4.43 (.79)	4.36 (.85)
32. Teachers participate in workshops as part of our professional development program.	4.62 (.60)	4.63 (.55)	4.59 (.66)	4.61 (.64)
33. Teachers take courses as part of the professional development program.	4.38 (.85)	4.58 (.69)	4.41 (.80)	4.19 (.89)
34. Teachers are granted sabbaticals as part of the professional development program	3.10 (1.62)	3.82 (1.58)	2.76 (1.68)	2.49 (1.63)
35. Over the course of the school year teachers are engaged in planned professional learning activities for more than 40 hours.	1.44 (.87)	1.22 (.58)	1.59 (.91)	1.67 (.92)
36. Time is scheduled each week for teachers to discuss what they learn from professional development activities with colleagues.	1.37 (.72)	1.25 (.50)	1.57 (.80)	1.65 (.82)
37. Professional development activities occur every week.	1.48 (.74)	1.29 (.60)	1.55 (.79)	1.69 (.77)

(table continues)

Table 11 (continued)

Item	All Participants M (SD)	Upper School Division Heads M (SD)	Middle School Division Heads M (SD)	Lower School Division Heads M (SD)
38. Teachers spend more than one hour each week engaged in professional development activities.	1.42 (.81)	1.20 (.65)	1.61 (.92)	1.68 (.86)
39. Teacher study groups meet each week as part of our professional development activities.	1.34 (.83)	1.19 (.71)	1.50 (.86)	1.57 (.88)
40. Professional development activities are built into the regular work day of teachers.	1.52 (.86)	1.31 (.77)	1.63 (.89)	1.70 (.87)

Note: M = mean, SD = standard deviation

For the "tradition" factor the ANOVA was significant, $F(2,2474) = 24.68$, $p < .001$, and the effect size as indicated by eta square was moderate (.038). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the three pairwise comparisons, requiring a *p* value of less than .005 (.05/3 = .016) for significance to be established. Follow up tests revealed no significant difference between lower and middle school division heads ($p = .12$) and no significant difference between middle and upper school division heads ($p = .13$), but there was a significant difference found between lower and upper school division heads ($p < .001$).

The ANOVA for the "coherence" factor was significant, $F(2,2474) = 33.701$, $p < .001$, and the effect size (Cohen, 1992) as indicated by eta square was moderate (.049). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the three pairwise comparisons, requiring a *p* value of less than .005 (.05/10 = .005) for significance to be established. Follow up tests revealed no significant difference between lower and middle school division heads ($p = .50$), but did reveal significant differences between middle and upper school division heads ($p < .001$) and lower and upper school division heads ($p < .001$).

For the "active learning/collaboration" factor the ANOVA was significant, $F(2,2474) = 38.56$, $p < .001$, and the effect size as indicated by eta square was moderate (.061). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the three pairwise comparisons, requiring a *p* value of less than .005 (.05/10 = .005) for significance to be established. Follow up tests revealed no significant difference between lower and middle school division heads ($p = .14$), but did reveal significant differences between middle and upper school division heads ($p < .001$) and lower and upper school division heads ($p < .001$).

The ANOVA for the "duration" factor was also significant, $F(2,2474) = 48.69$, $p < .001$, and the effect size as indicated by eta square was between moderate (.074). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the three pairwise comparisons, requiring a *p* value of less than .005 (.05/10 = .005) for significance to be established. Follow up tests revealed no significant difference between lower and middle school division heads ($p = .53$), but did reveal significant differences between middle and upper school division heads ($p < .001$) and lower and upper school division heads ($p < .001$).

Professional Learning Practices Across Professional Development Budget Sizes

Mean scores for the five factors of the ISTDI for each of the five categories of professional development budgets are presented in Table 12. To determine whether statistically significant differences existed between the five professional development budget types on factor scores, I conducted five one-way ANOVAs. Results showed few significant differences in professional development practices across the different professional development budget amounts. No significant differences were found across the budget types for the "content" factor, $F(4,2474) = 1.08$, $p = .36$, and the eta square was small (.026); the "tradition" factor, $F(4,2474) = 1.24$, $p = .29$, and the eta square was small (.032); and the "coherence" factor, $F(4,2474) = 1.43$,

p = .25, and the eta square was small (.029). For the "active learning/collaboration" factor the ANOVA was significant, F(2,2474) = 29.89, p < .001, and the effect size as indicated by eta square was moderate (.047). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the 10 pairwise comparisons, requiring a p value of less than .005 (.05/10 = .005) for significance to be established. Follow up tests revealed that the only significant between group differences were between the "under 5 thousand" budget category and the "between 15 and 20 thousand" budget category (p < .001), and the "under 5 thousand" budget category and the "over 20 thousand" category (p < .001). The ANOVA was also significant for the "duration" factor, F(4,2474) = 31.48, p < .001, and the effect size as indicated by eta square was moderate (.048). The researcher used the Bonferroni approach (Rosnow & Rosenthal, 2005) to control for Type I error across the 10 pairwise comparisons, requiring a p value of less than .005 (.05/10 = .005) for significance to be established. Follow up tests revealed that the only significant between group differences were between the "under 5 thousand" budget category and the "over 20 thousand" category (p < .001).

Table 12

ISTDI Factor Descriptive Statistics Across Professional Development Budget Sizes

Factor	All Participants M (SD)	Under 5 Thousand M (SD)	Between 5 and 10 Thousand M (SD)	Between 10 and 15 Thousand M (SD)	Between 15 and 20 Thousand M (SD)	Over 20 Thousand M (SD)
Factor 1: Active Learning/ Collaboration	2.17 (.70)	2.02 (.64)	2.12 (.79)	2.13 (.75)	2.31 (.68)	2.33 (.72)
Factor 2: Content Focus	3.47 (.71)	3.56 (.66)	3.51 (.73)	3.43 (.69)	3.48 (.76)	3.52 (.68)
Factor 3: Coherence	2.92 (.76)	2.86 (.82)	2.96 (.72)	3.00 (.71)	2.89 (.74)	2.95 (.78)
Factor 4: Traditional	4.50 (.68)	4.54 (.69)	4.47 (.72)	4.45 (.62)	4.58 (.64)	4.52 (.70)
Factor 5: Duration	1.42 (.81)	1.29 (.77)	1.37 (.82)	1.39 (.85)	1.58 (.74)	1.61 (.79)

Note: M = mean; SD = standard deviation

Conclusions

A national study by Murray (unpublished, 2010) indicated that a significant gap exists between research-based best practices for effective teacher professional learning and current teacher learning opportunities in U.S. independent schools. While this study was important and useful, additional details are needed before independent school leaders can begin to fully understand how and why current professional development practices lag behind research-based best practices for effective professional development. The present study was conducted to address this need and was guided by the following research questions:

1. To what extent are there differences in professional development practices in U.S. independent schools across divisions (elementary schools, middle schools and high schools)?

2. To what extent are there differences in professional development practices in U.S. independent schools across professional development budget size?

This section will discuss these research questions in light of the findings of this study, and will examine the implications of Murray's study (unpublished, 2010) and this study for independent school leaders and practitioners.

Research Question One

Findings of this study indicate that a small but significant gap exists between the professional learning opportunities available to U.S. independent lower school teachers and independent upper school teachers. Specifically, in U.S. independent schools administrators report that lower school teachers are more likely to experience activities connected to teacher needs, student needs, and school goals, more likely to experience activities which extend over time, more likely to experience activities embedded into their daily work, and more likely to experience teacher collaboration and active forms of learning than their upper school

counterparts. Similar but smaller differences were found between independent middle and upper school teachers and no differences were found between independent lower and middle school teachers. However, while statistically significant differences across divisions exist, these differences have less practical significance because a significant gap between current professional learning practices and research-based principles of effective teacher learning exists in all independent school divisions. Lessons can be learned from independent lower schools about how to move closer to the standards set for effective teacher learning, but much work remains for all independent school divisions to close the gulf between best practices and current practices.

Cultural differences between public elementary schools and high schools have been cited as the primary reason for differences in professional learning practices across public school divisions (Blank & de las Alas, 2009; Darling-Hammond et al., 2009), with "elementary school cultural norms more often favoring ongoing teacher collaboration during the school day and a greater connection of teacher professional development with the daily needs of students and teachers" (p. 8). Bassett (2006) and Jorgenson (2006) have commented on similar cultural differences between independent lower and upper schools, and these are the likely reason for the gaps found in this study between lower and upper school professional development activities

Research Question Two

Results of this study indicate that professional development budget size has little influence on professional development practices in U.S. independent schools, with few statistically significant differences existing between schools with different professional development budget sizes. Of the statistically significant differences which are present (between the smallest and largest professional development budget sizes for the duration and active

learning/collaboration factors), there is little practical significance because the gap between current practices and best practices is also large in these cases. In other words, regardless of professional development budget size, the professional learning opportunities available to teachers in U.S. independent schools continues to consist primarily of workshops, speakers and conferences. It is not simply a matter of some schools having the financial resources to implement research-based effective professional development while others with fewer resources continue to use traditional approaches. These findings suggest that something more fundamental, such as cultural traditions of teacher isolation in independent schools, is contributing to the gap between current professional development practices and more effective approaches backed by years of research.

Implications

Murray's survey (2010, unpublished) of the professional development practices of U.S. independent schools found that teacher learning opportunities in independent schools do not meet the standards established for effective teacher professional development, and highlighted the need for independent schools to consider the professional development reforms called for by Bassett. With the additional details about independent school teacher professional learning practices found in this study, independent school leaders now have substantial information available about *what* is happening regarding teacher professional development. Independent school leaders must now move to examining *why* a large gap exists between current practices and best practices, *what* needs to be changed to close this gap, and *how* independent schools can make these changes to move closer to the standards established for effective professional development.

So, *why* does such a large gap exist between current professional learning practices and research based best practices of professional teacher learning in U.S. independent schools and *what* must be done to narrow this gap? Many possible reasons exist for the gap, beginning with professional issues such as time pressures and stress at work (Hargreaves, 1997; Hochschild, 1997). As in public schools, independent school teachers are often overworked and overextended (Jorgenson, 2007), making it difficult for them to invest the additional time and energy inherent in more effective methods of teacher professional learning. Zepeda (2008) argues that "the schedule of the day must be restructured to provide teachers with focused opportunities to engage in the type of work called for by research on effective professional development" (p. 29). In Japan and Sweden, two countries noted for both their high student achievement and effective teacher professional learning (Darling-Hammond et al., 2009), time for teacher professional learning is built into the regular work day of teacher. It is clear that time must be found for independent schools to move towards more effective teacher professional learning practices.

A second issue is the problem of introducing change in such change-weary times (Evans, 2002; Fullan, 2003). As Evans (2002) observes, "even in cases where schools have tried to implement changes in how their teachers learn, the effect has been minimal because teachers are often cynical and resistant from the many prior initiatives that went absolutely nowhere" (p. 128). Teachers will not commit time and energy without some understanding of the reasons for their efforts and some confidence that their efforts will lead to some positive result (Fullan, 2003). Independent school teachers must be convinced that "this change initiative will be different" for more effective methods of professional development to take hold.

While there is little doubt that the reasons given above contribute to the reliance of independent schools on ineffective conventional professional development practices, two even more deep-seated, and therefore more intractable, reasons better explain the current gap between best practices and reality. First, professional development programs in independent schools are typically based on the false assumption that significant teacher insight and learning requires external direction. This assumption leads to teachers being sent to conferences to learn from experts, and bringing the experts to the school to speak and conduct workshops. Because formal follow-up conversations to these events are rare, and because informal avenues for sharing and discussing what is learned are typically absent, these "outside" professional development events do not influence teacher instruction or student learning. More damaging, though, is that this false assumption leads to a reduction in collaboration and conversation among teachers, the very things schools most need to establish sustained effective professional learning. The assumption that teacher learning must be externally driven must be challenged and changed for progress towards quality professional learning in independent schools to occur. Second, and perhaps of even greater importance, independent schools have long been characterized by a culture where teachers work in isolation and are insulated from opportunities to engage in and demonstrate professional learning and growth (Dronkers & Robert, 2007; Zepeda, 2008). The professional development activities that do exist are typically not even built into the regular work day of teachers, disconnecting them from the daily issues faced by teachers and communicating in a not so subtle way that professional learning is far down the list of priorities independent schools have for their teachers. Efforts to close the gap between research-based best practices and current practices must begin by creating a culture where continual job-embedded professional learning becomes part of the culture of independent schools.

One factor notably absent from the discussion above about *why* actual professional development practices in independent schools lag behind research-based best practices, and *what* must be changed to close this gap, is money. Given that professional development funding for both public and independent schools has been cut in recent years, understanding the relationship between money spent on professional development and the effectiveness of teacher professional development programs has become essential. Importantly, results from this study and several others (Darling-Hammond et al., 2009; Stigler & Hiebert) indicate that the amount of money spent on professional development in a school has little connection to the effectiveness of the professional development methods used by a school. The only statistically significant differences found have been between the largest and smallest funding categories, but these differences are too small to have any practical significance These findings remove "lack of professional development funding" from the list of reasons for *why* current professional development practices are lacking in independent schools while simultaneously eliminating "increase professional development funding" from the list of *what* must be changed.

In addition to examining *why* such a large gap exists between current professional learning practices and research based best practices of professional teacher learning in U.S. independent schools, and *what* must be done to narrow the gap, independent school leaders must also begin to ask *how* to make the changes necessary to improve the teacher learning opportunities in their schools. Initial answers to this question can be found by examining exemplar schools that have successfully integrated research-based best practices of teacher learning into their professional development programs. Identifying and studying such schools can help independent school leaders understand how to build the organizational capacity to provide more effective types of professional learning opportunities for their teachers. Further,

exemplar schools can help leaders identify the specific types of organizational structures and features that are needed to support and facilitate effective professional learning in independent schools? For example, The Lawrenceville School in New Jersey has developed creative scheduling which carves out dedicated time during the school day for teacher collaboration and learning (Jorgenson, 2007). They worked to "completely suspend judgment about how the school day must be structured to arrive at a system where teachers at all levels are able to regularly meet to discuss their instruction and student learning" (Jorgenson, 2007, p. 5). In addition, methods for monitoring and evaluating the quality of professional learning opportunities can be identified by searching out and studying exemplar schools. Finally, given that resources for professional development in independent schools have shrunk in recent years, exemplar schools can help identify the best way to target resources in terms of content, delivery, and teachers.

The findings of this study suggest that answers to the question of *how* to make the changes necessary to improve teacher professional learning may also be found in examining why the lower school divisions of independent schools are more aligned with standards for effective professional learning than middle school and upper school divisions. Examining possible differences in culture, teacher collaboration, and scheduling between independent lower schools and their middle school and upper school counterparts may be very instructive in helping all independent school divisions improve their professional development programs.

NAIS president Patrick Bassett has been emphasizing that independent schools must devote greater attention to how they provide professional development for their teachers, arguing independent schools "must not be wedded to tradition when research and experience has taught us that more effective methods of professional development are needed and are available" (2006,

p.1). The findings of this study provide support for his words and highlight the need for independent schools to have a greater sense of urgency in examining *why* professional development opportunities for independent school teachers lag behind best practices, *what* must be changed, and *how* these changes can be made to improve the professional development opportunities for independent school teachers.

CHAPTER VII. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Purpose of the Study

Current reform movements aimed at transforming our nation's schools ultimately depend on teachers. Improvements in student achievement will occur only by providing opportunities for teachers to develop the knowledge and skills demanded by the new educational standards. As Borko (2004) emphasizes, "improving the educational experience in our schools is dependent upon providing deeper, more relevant learning opportunities for our teachers" (p. 3).

Significant agreement now exists regarding the essential characteristics of learning opportunities that can impact teachers' knowledge and practices (Desimone, 2009), but most U.S. public school teachers do not currently have access to the types of effective professional learning opportunities needed to improve their instruction (Darling-Hammond et al., 2009). Meanwhile, professional development practices in U.S. independent schools, those schools not dependent on a government entity for financing or governance, have not been examined. For U.S. independent schools to move towards the standards established for effective professional development, and thereby improve teacher instruction and learning outcomes for the 500,000 students that attend them, accurate information about the current status of teacher learning in independent schools must be obtained. To address this problem, a national study to assess the extent to which professional development opportunities in U.S. independent schools are aligned with what research says about effective professional development practices was conducted.

Theoretical Framework

For many years the only form of teacher professional development was "in-service training" consisting of workshops, speakers, and short-term courses that offer teachers new information on a particular aspect of their work (Webster-Wright, 2009). Educational researchers have criticized such approaches (Guskey, 1986; Ingvarson, Meiers, & Beavis, 2005; Supovitz & Turner, 2000), concluding that they are disconnected from deep issues of curriculum and learning and do not lead to improvements in classroom teaching. In Zepeda's words (2008), "workshops and conferences lead to few, if any, significant changes in instruction and need to be replaced with more effective job-embedded forms of professional learning" (p. 19).

The clear ineffectiveness of conventional professional development methods motivated educational researchers to seek out the essential components of effective teacher professional development. This research has led to clarifications about the essential characteristics of professional development that are critical to increasing teacher knowledge and skills, and which hold promise for increasing student achievement. Key characteristics of effective professional development include collaborative work groups, a focus on pedagogical content knowledge, alignment with school improvement goals, being sustained over time, and using active methods of teacher learning (Desimone, 2009; Guskey, 2003).

With a significant body of research available on what constitutes high-quality professional development, and with a national focus on professional development being essential to improving schools, one would expect that actual professional development practices in U.S. schools would be approaching many of these quality guidelines. However, several national studies (Darling-Hammond et al., 2009; Garet et al., 2002) have demonstrated that professional

development opportunities in U.S. public schools fall short of meeting standards for effective professional development.

While improving professional development practices in U.S. public schools has become a priority for educators, policymakers, and researchers, professional development practices in U.S. independent schools have gone unexamined. National Association of Independent Schools (NAIS) vice-president Craig Thorn has called for significant changes in the professional development practices of independent schools, stating that professional development practices should be "modeled after international schools which incorporate many of the research-based characteristics of effective learning into their professional development programs" (2004, p. 92).

However, for U.S. independent schools to align teacher learning opportunities with standards for effective professional learning, accurate information about the current status of teacher learning opportunities in NAIS schools must be obtained. A large scale study focused on current professional development practices in U.S. independent schools is needed and the present study was conducted to meet this need. With accurate information about the nature of professional development opportunities available to independent school teachers across the United States, independent school leaders can begin to evaluate the needs of the schools in which teachers learn and work, and plan how to better design and support the professional learning of teachers.

Research Questions

1. What factors in the *Independent School Teacher Development Inventory* are identified through exploratory factor analysis procedures? Are factors corresponding to traditional professional development, and the five features of effective professional development

(content, duration, collaboration, active learning, and coherence), established using confirmatory factor analysis?

2. To what extent are professional development practices in U.S. independent schools consistent with research-based principles of effective teacher professional development?

3. To what extent are there differences in professional development practices in U.S. independent schools across divisions (elementary schools, middle schools, and high schools)?

4. To what extent are there differences in professional development practices in U.S. independent schools across professional development budget size?

Methods

I developed a national survey, the Independent School Staff Development Inventory (ISTDI), to examine the availability of professional development opportunities to teachers in National Association of Independent Schools (NAIS) member schools. While both the 2007–08 Schools and Staffing Survey (National Center for Education Statistics) and the 2007–08 Standards Assessment Inventory (National Staff Development Council) informed the development of survey items, I derived them primarily from the specific research questions of this study and the common themes identified in the review of literature. More specifically, I based the items of the survey on six areas identified in the literature review: conventional professional development methods (e.g., workshops and conferences) and the five characteristics of effective professional development (content focus, duration, active learning, coherence, and collective participation). I established the appropriateness of item content through two rounds of expert reviews, cognitive interviews, and a field test, while I determined the level of reliability of the survey results by examining internal consistency reliability.

The final version of the ISTDI consisted of 40 items answered using a five-point Likert-type scale consisting of the following: (1) Never, (2) Seldom, (3) Sometimes, (4) Frequently, and (5) Always. The ISTDI was sent electronically to all 3422 NAIS division heads (NAIS terminology for principals), 1264 of them being division heads of high schools, 1049 division heads of middle schools, and 1109 division heads of elementary schools. The response rate was 72%, with 2474 completed surveys. Of the completed surveys, 1023 (41.4%) were from high school division heads, 674 (27.2%) were from middle school division heads, and 777 (31.4%) and were from elementary school division heads.

Exploratory factor analysis and confirmatory factor analysis provided answers to research question one. Simply put, exploratory factor analysis is concerned with investigating how many factors emerge among the items on an instrument, while confirmatory factor analysis is concerned with testing a hypothesis about the specific number of factors making up an instrument (Pedhazur & Schmelkin, 1991).

To address research question two, I analyzed factor scores for the ISTDI and individual item scores using descriptive statistics such as percentages, means, and standard deviations. With this data, I was able to determine the prevalence of both effective and ineffective professional development opportunities in independent schools, as well as compare the relative prevalence of one type of professional development opportunity with another one.

To address research question three, I analyzed factor scores and individual item scores for the ISTDI for the three division types using descriptive statistics such as percentages, means, and standard deviations. In addition, to determine whether statistically significant differences existed between the three division types on factor scores, I conducted multiple one-way ANOVA's.

To address research question four, I analyzed factor scores for the five professional development budget categories using descriptive statistics such as means and standard deviations. Also, to determine whether statistically significant differences existed on factor scores between schools with different professional development budgets, I conducted multiple one-way ANOVAs.

Findings

For research question one both exploratory factor analysis and confirmatory factor analysis unexpectedly revealed that the ISTDI is comprised of five factors instead of six factors: traditional, duration, content, coherence, and active learning/collaboration. Items comprising the traditional, duration, coherence, and content factors were consistent with expectations based on the theoretical foundation of the instrument. It was expected that the active learning items and collective participation items would form separate factors, but the fact that "activities involving active teacher learning often include teacher collaboration" (Darling-Hammond et al., 2009, p. 11) makes this result meaningful and consistent with the theoretical foundation of the instrument.

Results addressing research question two indicated that a significant gap exists between current professional development practices in U.S. independent schools and research-based best practices of effective professional development. Despite extensive research demonstrating the ineffectiveness of conventional professional development approaches (Garet et al., 2001; Webster-Wright, 2009), and despite calls from NAIS president Patrick Bassett (2006) to transform the way independent school teachers grow in their profession, results indicated that independent school teacher professional learning continues to consist primarily of traditional workshops, speakers and conferences. Findings revealed that research-based principles of effective professional development are rarely applied in independent schools. For example,

results indicated that independent school professional learning activities rarely extend over time, are rarely connected to teacher or student needs, rarely involve teacher collaboration and active teacher learning, and rarely are focused on helping teachers understand how students best learn specific subject matter.

Findings of this study addressing research question three indicated that a small but significant gap exists between the professional learning opportunities available to U.S. independent lower school teachers and independent upper school teachers. In U.S. independent schools lower school teachers are more likely to experience activities connected to teacher needs, student needs, and school goals, more likely to experience activities which extend over time, more likely to experience activities embedded into their daily work, and more likely to experience teacher collaboration and active forms of learning than their upper school counterparts. Similar but smaller differences were found between independent middle and upper school teachers and no differences were found between independent lower and middle school teachers.

Results showed few significant differences in professional development practices across the different professional development budget amounts. No significant differences were found across the budget types for the "content" factor, the "tradition" factor, and the "coherence" factor. For the "active learning/collaboration" factor the only significant between group differences were between the "under 5 thousand" budget category and the "between 15 and 20 thousand", and between the "under 5 thousand" budget category and the "over 20 thousand" category. For the "duration" factor the only significant between group differences were between the "under 5 thousand" budget category and the "between 15 and 20 thousand" budget category, and between the "under 5 thousand" budget category and the "over 20 thousand" category.

Implications

Given the results of the recent national study on U.S. public schools (Darling Hammond et al., 2009), and the comments by NAIS president Pat Bassett (2006) criticizing professional learning practices in U.S. independent schools, the findings here that U.S. independent schools continue to rely on traditional workshops and conferences for the professional development of their teachers are not surprising. With information now available on the current status of professional learning opportunities in U.S. independent schools, attention must now turn to addressing two questions. First, why does such a large gap exist between research-based best practices of teacher professional learning and current practices? Many potential reasons exist, including time pressures and stress at school, problems with introducing change, and the fact that considerable resources have been invested in established structures for providing development activities for teachers. However, two more deep-rooted reasons provide a better explanation for this gap between best practices and reality. First, independent schools have been characterized by a culture where teachers work in isolation and are insulated from opportunities to engage in and demonstrate professional learning and growth (Dronkers & Robert, 2007; Zepeda, 2008), and second, professional development programs in independent schools have typically been based on the belief that significant teacher learning requires experts from outside of the school. Efforts to close the gap between research-based best practices and current practices must begin by creating a culture where continual job-embedded professional learning becomes part of the culture of independent schools. Second, how can independent school leaders and teachers close the gap between research-based best practices and reality? Initial answers to this question can be found by identifying and examining "model" independent schools that have successfully integrated research-based best practices of teacher learning into their professional development

programs. Studying such schools can help independent school leaders understand how to build the organizational capacity to provide more effective types of professional learning opportunities for their teachers. Such schools can also help leaders identify the specific types of organizational structures and features that are needed to support and facilitate effective professional learning in independent schools. For example, different types of scheduling which block out dedicated time during the school day for teacher collaboration and learning can be identified in this process. Further, methods for monitoring and evaluating the quality of professional learning opportunities can be identified by searching out and studying "model" schools. As researchers have found, school change efforts focused exclusively on structural transformations are rarely successful (Desimone,2009; Fullan,2004). So, it will be necessary for independent school leaders to address both cultural factors (for example, long-standing norms of teacher autonomy and isolation) and organizational factors (for example, little or no common time during the school day for teachers to collaboratively plan and reflect) as they work to provide more effective professional learning opportunities for their teachers.

NAIS president Patrick Bassett has been emphasizing that independent schools must transform the professional learning opportunities they provide for their teachers, arguing that professional development practices should be more connected with school goals and student needs, should be more collaborative, and should be embedded into the daily work of teachers (Bassett, 2006). The findings of this study provide support for his words and highlight the need for independent schools to have a greater sense of urgency in examining *why* professional development opportunities for independent school teachers lag behind best practices and *how* professional development opportunities for independent school teachers can be improved.

Future Research Directions

This study raises a number of related questions that deserve further exploration. First, why does such a large gap exist between current professional learning practices and research based best practices of professional teacher learning in U.S. independent schools? Are cultural traditions of teacher isolation and conventional assumptions about professional development the primary reasons? Is lack of knowledge about more effective practices part of the problem. Further, are there structural obstacles, such as school schedules, which contribute to this gap? Second, how can U.S. independent schools build the organizational capacity to provide more effective types of professional learning opportunities for their teachers? What specific types of organizational features are needed to support and facilitate effective professional learning in independent schools? Are the organizational features needed in public schools for improved professional learning the same as those needed in independent schools? Third, how can independent schools monitor and evaluate the quality of their professional development programs to ensure they are positively influencing teacher learning, teacher instruction, and student performance? Fourth, can the ISTDI be a useful tool with other target populations? It was developed here for use with independent school administrators but it may also be useful with independent school teachers, public school teachers, and public school administrators. Finally, given that resources for professional development in independent schools has shrunk in recent years, what is the best way to target resources in terms of content, delivery, and teachers? Can utilizing more research-based effective professional learning practices help school provide higher quality professional development at lower costs?

Concluding Remarks

It is hoped that the results of this study will prompt researchers and independent school policymakers and leaders to take actions which will lead to powerful teacher learning, real instructional improvement, and deeper student learning. By examining information about the nature of professional development opportunities currently available to independent school teachers across the United States, independent school leaders can begin both to evaluate the needs of the systems in which teachers learn and work, and to consider how independent school teachers' learning opportunities can be further supported.

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Appendix A

The Independent School Teacher Development Inventory

Independent School Teacher Development Inventory

Directions: 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 independent schools. The information you provide will be combined with the information provided by others in statistical reports. No personal or school-identifiable data will be included in the reports. It is best to complete this survey alone with no interruptions. Completing this survey will take about 10 minutes.

I. Please mark the responses that most accurately reflect your experiences at your school during the past school year.

Choose ONE for Each Question	***Never (1)***	***Seldom (2)***	***Sometimes (3)***	***Frequently (4)***	***Always (5)***
1. Professional development is focused on helping teachers better understand the content of their academic discipline.					
2. Teachers participate in setting the goals of the professional development program.					
3. Teachers participate in workshops as part of the professional development program.					
4. Professional development activities are built into the regular work day of teachers.					
5. Research-based best practices inform the professional development activities in our school.					
6. Outside experts conduct our professional development activities					
7. Professional development activities relate directly to our institutional goals.					
8. We select/design professional development activities based on an analysis of our students' needs.					
9. Professional development activities occur on-site at our school.					
10. Teachers meet by grade-level to discuss instruction and student learning.					

Choose ONE for Each Question	***Never (1)***	***Seldom (2)***	***Sometimes (3)***	***Frequently (4)***	***Always (5)***
11. Teachers attend conferences as part of the professional development program.					
12. Professional development activities focus on specific pedagogical skills.					
13. Teachers spend more than one hour each week engaged in professional development activities.					
14. Our school personnel conduct our professional development activities.					
15. Specific teacher needs inform the selection/design of our professional development activities.					
16. Teacher study groups meet each week as part of our professional development activities.					
17. Teachers plan instruction together.					
18. Teachers take university courses as part of the professional development program.					
19. Professional development activities occur each week.					
20. Teachers meet by content area to discuss instruction and student learning.					
21. Soon after returning from off-site professional development experiences, teachers formally share their learning with their colleagues.					
22. Professional development activities include peer coaching.					
23. Professional development activities are focused on helping teachers understand how students learn best in specific content areas.					
24. Beginning teachers have formal opportunities to work with mentor teachers.					
25. Professional development activities include opportunities for teachers to collaboratively examine and discuss student work.					
26. Professional development activities include opportunities for teachers to observe and critique each other.					
27. Professional development activities are aligned with the curriculum.					

Choose ONE for Each Question	***Never (1)***	***Seldom (2)***	***Sometimes (3)***	***Frequently (4)***	***Always (5)***
28. Time is scheduled each week for teachers to discuss what they learn from professional development activities with other teachers					
29. We select/design professional development activities related to teachers integrating technology into their specific content areas					
30. Teachers are granted sabbaticals as part of the professional development program					
31. Our professional development activities take place on weekdays between 8:00am and 3:00pm					
32. We design/select professional development activities to help teachers learn instructional methods for their specific academic discipline.					
33. Teachers have opportunities to practice skills gained during professional development with colleagues prior to integrating into classroom instruction.					
34. Our school pays outside consultants to present professional development activities to our teachers.					
35. Teacher professional development is part of our school improvement plan					
36. Over the course of the school year teachers are engaged in planned professional learning activities for more than 40 hours					
37. We provide structured support for teachers implementing new skills until they become a natural part of their classroom instruction					
38. We involve our teachers in selecting/ designing the specific activities of our professional development program.					
39. We provide formal training for our teachers on how to effectively collaborate with each other.					
40. Teachers have opportunities to apply and practice new skills and knowledge during professional development activities.					

II. Please mark the responses that best fit the characteristics of you and your school at the beginning of this academic year.

	Lower	Middle	Upper
1. In which type of school are you a division head?			

	0-3 Years	4-7 years	8-11 Years	12 or More Years
2. How long have you been a division head?				

	Day School	Boarding School	All Boys School	All Girls School	Co-educational School
3. Which of the following describes your school (check all that apply)?					

	Under 3 Million	Between 4 and 10 Million	Between 10 and 15 Million	Between 15 and 20 Million	Over 20 Million
4. Which best describes the endowment of your school?					

	Name of the State
5. In what state is your school located?	

	Under 100	100-199	200-299	300-400	Over 400
6. Which best describes the number of students in your division?					

	Under 5 Thousand	Between 5 and 10 Thousand	Between 10 and 15 Thousand	Between 15 And 20 Thousand	Over 20 Thousand
7. Which best describes the size of the professional development budget for your division?					

Thank you very much for taking the time to complete this survey. A summary of the results will be sent to all participants in September of 2010.

Appendix B

Electronic Announcement Letter about the Study

Auburn University College of Education
Department of Educational Foundations, Leadership and Technology
4036 Haley Center
Auburn University, AL 36849
334-844-4460

Dear NAIS Division Head:

I am a doctoral candidate in the Department of Educational Foundations, Leadership and Technology at Auburn University. As part of my doctoral dissertation I am conducting a study on professional development practices in NAIS schools. Participants will be asked to complete a brief survey about the professional development opportunities available to the teachers in their schools. Less than 20 minutes is needed to complete the survey and results of this study will be provided to all participants.

Next week I will be sending you a formal invitation to participate in the study. Additional details about the study will come with that letter, including information about how to request access to the link for the online survey. If you have any questions, please contact me at jmm0028@auburn.edu or my advisor, Dr. Lisa Kensler, at lak0008@auburn.edu.

Thank you for your consideration,

John Murray

Appendix C

Electronic Invitation to Participate in the Study

Auburn University College of Education

Department of Educational Foundations, Leadership and Technology
4036 Haley Center
Auburn University, AL 36849
334-844-4460

Dear NAIS Division Head:

I am a doctoral candidate in the Department of Educational Foundations, Leadership and Technology at Auburn University. I would like to invite you to participate in my research study on the professional development practices of NAIS schools.

Participants will be asked to complete a brief survey about the professional development opportunities available to the teachers in their schools. Less than 20 minutes is needed to complete the survey and results of this study will be provided to all participants.

If you are interested in participating in this study and would like more detailed information about it, an informational letter can be obtained by sending an e-mail to me at jmm0028@auburn.edu. If you decide to participate after reading the informational letter, you can access the survey from a link in the letter.

If you have any questions, please contact me at jmm0028@auburn.edu or my advisor, Dr. Lisa Kensler, at lak0008@auburn.edu.

Thank you for your consideration,

John Murray

Appendix D

Electronic Information Letter about the Survey

Auburn University College of Education
Department of Educational Foundations, Leadership and Technology
4036 Haley Center
Auburn University, AL 36849
334-844-4460

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

INFORMATION LETTER
for a Research Study entitled
"*Assessing the Status of Professional Learning Opportunities in U.S. Independent Schools"*

You are invited to participate in a research study to assess the current status of professional learning opportunities for teachers in NAIS schools. The study is being conducted by doctoral student John Murray under the direction of Dr. Lisa Kensler in the Auburn University Department of Educational Foundations, Leadership and Technology. You were selected as a possible participant because you are division head in an NAIS member school.

Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete an online survey. The only risk or discomfort associated with this study is the time needed to complete the survey. To minimize this discomfort, your total time commitment to complete the survey will be less than 20 minutes. If you participate in this study you will receive the results of the study and will be contributing to knowledge about professional development practices in NAIS schools which will inform discussions about how to continue to improve the professional learning opportunities available for teachers in NAIS schools.

Data you provide in connection with this study will remain anonymous because QuestionPro, the website hosting the survey, does not collect e-mail or IP addresses when surveys are completed. Information collected through your participation will be used to complete the doctoral dissertation of John Murray, may be published in a professional journal, and may be presented at a professional conference.

If you have questions about this study, please contact John Murray at jmm0028@auburn.edu or Dr. Lisa Kensler at lak0008@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or e-mail at the hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK THE LINK BELOW. YOU MAY PRINT A COPT OF THIS LETTER FOR YOUR RECORDS

John Murray April 10, 2010

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Investigator Date

The Auburn University Institutional Review Board has approved this document for use from March 20, 2020 to March 19, 2011. Protocol #10-070 EX 1003.

LINK TO THE SURVEY

Appendix E

Reminder Electronic Invitation Number One

Auburn University College of Education

Department of Educational Foundations, Leadership and Technology
4036 Haley Center
Auburn University, AL 36849
334-844-4460

Dear NAIS Division Head:

I am a doctoral candidate in the Department of Educational Foundations, Leadership and Technology at Auburn University. Last week I sent you an e-mail inviting you to participate in my research study on the professional development practices of NAIS schools. **If you are interested in participating in this study and would like more detailed information about it, an informational letter can be obtained by sending an e-mail to me at jmm0028@auburn.edu. If you decide to participate after reading the informational letter, you can access the survey from a link in the letter.**

Participants will be asked to complete a brief survey about the professional development opportunities available to the teachers in their schools. Less than 20 minutes is needed to complete the survey and results of this study will be provided to all participants.

If you have any questions, please contact me at jmm0028@auburn.edu or my advisor, Dr. Lisa Kensler, at lak0008@auburn.edu.

Thank you for your consideration,

John Murray

Appendix F

Reminder Electronic Invitation Number Two

Auburn University College of Education

Department of Educational Foundations, Leadership and Technology
4036 Haley Center
Auburn University, AL 36849
334-844-4460

Dear NAIS Division Head:

I am a doctoral candidate in the Department of Educational Foundations, Leadership and Technology at Auburn University. Three weeks ago I sent you an e-mail inviting you to participate in my research study on the professional development practices of NAIS schools. **If you are interested in participating in this study and would like more detailed information about it, an informational letter can be obtained by sending an e-mail to me at jmm0028@auburn.edu. If you decide to participate after reading the informational letter, you can access the survey from a link in the letter.**

Participants will be asked to complete a brief survey about the professional development opportunities available to the teachers in their schools. Less than 20 minutes is needed to complete the survey and results of this study will be provided to all participants.

If you have any questions, please contact me at jmm0028@auburn.edu or my advisor, Dr. Lisa Kensler, at lak0008@auburn.edu.

Thank you for your consideration,

John Murray