



# **An Exploratory Study of Factors Related to Hiring and Developing Effective Teachers in SAIS Member Schools**

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## Acknowledgments

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Independent schools are private schools not dependent upon any outside organization for governance or financing. They are truly independent with regard to operations and finances, and they follow a mission that drives the school's decision-making and operations. Because independent schools are not beholden to local, state, or national education policies and guidelines, they are free to determine their own criteria of effective teaching and to employ non-certified teachers and teachers with non-traditional educational backgrounds. In addition, they control decisions regarding professional development for their teachers.

Without requirements to use certification and state or national guidelines for teacher quality, and without external requirements for teacher preparation and professional development, the following questions arise: What factors related to effective teaching, teacher quality, and professional development are important to independent schools? What are independent schools' priorities for hiring teachers and providing professional development?

## Project Strategy

This exploratory study is designed to provide The Southern Association of Independent Schools (SAIS) with data and findings related to how its member schools define effective teaching, teacher quality, and professional development. Because of the lack of research in independent education, this study will provide new baseline data to SAIS - data that are not currently available - that can be used to inform the services they currently provide to member schools. SAIS would like to know the factors related to effective teaching that are important to SAIS Heads of School when hiring teachers and the extent to which their current faculty demonstrate those factors. In addition, SAIS is interested in the nature of and priorities for professional development in their member schools so that they can evaluate and refine their current professional development offerings.

A substantial body of research exists, primarily based on research in the public sector, on effective teaching, qualities of effective teachers, and how professional development contributes to teacher effectiveness. As part of this research project, this report contains a comprehensive review of the literature on effective teaching that can be found in Appendix A. Based on the literature, a survey was designed for SAIS Heads of School to address the following project questions:

1. What factors related to effective teaching are important to SAIS Heads of School when hiring teachers?
2. What are SAIS Heads' perceptions of the extent to which their current teachers demonstrate effective teaching practices?
3. What is the nature of professional development related to effective teaching in SAIS schools?

4. What are SAIS Heads' priorities for teacher professional development?

5. To what extent are Heads' priorities for professional development aligned with their perceptions of the strengths and weaknesses of their teachers?

## Key Findings

After analysis, the data gathered from the 163 SAIS Heads of School who participated in this study revealed the following key findings:

### *Factors Contributing to Effective Teaching*

- When hiring, respondents prefer candidates with an undergraduate degree in a content area with graduate degrees in either content areas or education. However, Heads reported they frequently hire candidates who only have undergraduate degrees.
- Undergraduate degrees in education are preferred at schools with lower school divisions.
- When asked about the importance of certification, almost half of respondents indicated a preference for teachers with either current or previous certification. Many Heads see certification as an important consideration in hiring.
- SAIS Heads' survey responses indicate that teacher certification is more important in rural schools than suburban schools.

### *Professional Practices*

- Heads rate the following areas as very important considerations in hiring teachers: mastery of subject area, creating an environment of respect and rapport, demonstrating enthusiasm and a positive attitude, and communicating clearly and accurately with students. Less important to Heads, but still important overall, are demonstrating knowledge of teaching resources, integrating technology instruction, and organizing physical space for optimal learning.
- Respondents indicate that their teachers do

well in the following areas: displaying mastery of subject area, creating an environment of respect and rapport, and communicating clearly and accurately with students. What teachers do less well, according to respondents, is integrating technology instruction, organizing physical space for optimal learning, and growing and developing professionally.

- Integrating technology instruction is one of the lowest areas of importance according to respondents and is also rated the lowest area for teacher performance.

### *Professional Development to Support Effective Teaching*

- Respondents indicated they are providing professional development in areas critical for effective teaching: content knowledge, assessment, pedagogical knowledge, instructional delivery, and planning for instruction.

- Heads' priorities for professional development are closely tied to instructional concerns.

- Development of content knowledge is a priority for professional development despite the fact that Heads reported that their teachers demonstrate strong content knowledge.

- Professional development is most often planned by administrators and support staff. However, larger schools are more likely to involve teachers in the planning of professional development. Heads with higher levels of education are more likely to allow teachers to plan professional development activities.

- Professional development activities are not frequently evaluated for evidence of improvement in teacher practice or student achievement.

### **Recommendations**

#### *General*

Respondents categorized their location as rural, suburban, or urban. SAIS does not categorize its schools using these terms, so we were unable to match the reported data to the entire population of SAIS member schools. However, several significant findings were related to school loca-

tion, leading us to our first recommendation for SAIS:

- Begin categorizing and tracking schools based on location - rural, suburban, and rural - in order to have the ability to evaluate the needs of schools based on location and provide differentiated services when needed or appropriate.

- Use existing school size and type categories to evaluate the needs of schools based on location and provide differentiated services when needed or appropriate.

#### *Hiring*

Although respondents in this study indicated a preference for content area degrees over degrees in education, they also indicated that they often hire teachers with degrees in education. With regard to hiring, we recommend that SAIS:

- Provide guidance and support to Heads with regard to hiring and recruiting teachers that match their hiring preferences. One way SAIS could help with this is to assist member schools in developing marketing materials to continue to attract effective teachers to independent schools. Messaging could focus on the benefits of teaching in independent schools, and schools should be encouraged to find ways to offer competitive, comprehensive benefits packages for teachers.

- To address the Heads' stated preference for teachers with subject area degrees, we recommend that SAIS explore partnerships with universities with the goal of creating opportunities to identify and attract teachers with strong content knowledge. A partnership with a university could allow for the creation of specialized subject area professional development and graduate degree programs, which could be used by SAIS member schools to strengthen the subject area knowledge of its teachers.

### *Professional Practices*

With regard to professional practices, we recommend that SAIS:

- Encourage its member schools to stay current on educational research and provide the comprehensive literature review to Heads and member schools.
- Develop workshops and training materials for schools to use with teachers that emphasize research-based effective teaching practices and the integration of technology to enhance instruction.

### *Professional Development*

Participants in this study clearly value content knowledge for their teachers. Therefore, we recommend that SAIS:

- Communicate the literature on the value of both content and pedagogical content knowledge to its member schools.

Because SAIS member schools prefer to hire teachers who have strong subject matter knowledge and degrees, we recommend that SAIS:

- Design and offer professional development opportunities to support pedagogical content knowledge and instructional methods for teachers in its member schools. Professional development for SAIS Heads could also prove valuable, particularly regarding the characteristics of effective professional development.

Heads indicated their influence and involvement in decision-making for professional development, but also revealed that they seldom evaluate professional development activities for their effect on student learning. We recommend that SAIS:

- Provide training for Heads regarding the value of involving teachers in professional development decision-making and on methods for linking professional development to student learning and evaluating its effectiveness.

Research in the field of independent education is scarce. While organizations like the National Association of Independent Schools (NAIS) pursue research for the betterment of independent schools, factors such as limited funding and a lack of willingness on the part of some independent schools to participate in research studies have resulted in a limited body of research in independent education. Therefore, studies like this are essential to build a base of knowledge regarding independent schools, provide a basis for future research, and inform independent school leaders to support their school improvement initiatives.

The Southern Association of Independent Schools (SAIS), the client for this project, is a voluntary organization of over 340 independent elementary and secondary schools throughout the Southeastern United States and Latin America, representing more than 185,000 students. The mission of SAIS is to provide leadership, accreditation services, and professional development resources that will strengthen member schools as they fulfill their missions. SAIS addresses issues of importance to non-public schools such as organizational excellence, accreditation, curriculum, professional development, governance, and leadership. Working at the state, regional, and national levels, SAIS serves and strengthens member schools through the promotion of the highest quality educational standards and ethical conduct.

By definition, “Independent schools are owned and governed by entities that are independent of any government or organization... They are typically governed by independent boards of trustees” (NCES, 2002). As such, schools operating independent of state governing bodies are free to develop their own policies and practices regarding teacher employment. Whereas public schools must abide by state regulations that dictate specific education qualifications and license requirements for employment eligibility, independent schools set their own standards, which often do not require completion of a state certification program.

In November 2006, the National Association of Independent Schools (NAIS) surveyed 1,000 adults in the United States to gather information about the public’s attitudes and beliefs regarding independent schools (NAIS, 2007). Asked to rank a set of 20 characteristics of a quality education, more than 80% of respondents rated “Employing high-quality teachers” as one of their top choices. Not surprisingly, these results mirrored those of a similar study conducted in 1999 (NAIS, 2007). In addition, when asked to compare who does a better job of employing high quality teachers, close to half of the respondents chose independent schools over public schools. The 2006 NAIS survey also revealed



### Project Questions

1. What factors related to effective teaching are important to SAIS Heads of School when hiring teachers?
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the public's *increased* confidence in the ability of independent schools to prepare students academically for college.

With such high public opinion of independent schools, one might expect a wealth of research to support the persisting belief in the abilities of independent schools and their teachers. However, the opposite is true. Very little, if any, research exists on the effectiveness of teachers in independent schools. In considering the available literature on teacher effectiveness, the challenge then, is to apply what has been learned generally to inform research that can contribute to an understanding of the unique needs of teachers in independent schools.

A substantial body of research exists, primarily based on research in the public sector, on effective teaching, qualities of effective teachers, and how professional development contributes to teacher effectiveness. SAIS is interested in obtaining a comprehensive review of the literature on effective teaching to share with its member schools (see Appendix A). In addition, based on the research on effective teaching, SAIS would like to examine the factors related to effective teaching that are important to SAIS Heads of School when hiring teachers and the extent to which their current faculty demonstrate those factors. Lastly, SAIS is interested in the nature of and priorities for professional development in their member schools in order to evaluate and develop their professional development offerings. The goal of this study is to survey SAIS Heads of School to explore these issues and to answer the project questions in the box at the left.

### Additional Questions

For each project question, variation across schools in responses are examined based on schools' characteristics, such as size, location (urban, suburban, rural), single gender student body, religious affiliation, and school type will be explored. These categories are currently used by SAIS to identify and group its member schools and are therefore used as a basis for data analysis in this study. This study is not designed to provide SAIS with a market study of public and private competition, but rather a comparative needs analysis of how its member schools are different from or similar to one another in these categories so that SAIS can differentiate its services based on schools' characteristics and needs. How priorities for hiring and professional development vary based on Heads' background characteristics, such as teaching experience and level of education, will also be ex-

plored. These analyses may prove to be important to SAIS if Heads with different levels of teaching experience and education view effective teaching and professional development differently, and they may also influence how SAIS provides professional development to Heads with varying levels of teaching experience and education. A complete list of the project questions and related sub-ques-

tions can be found in the data analysis plan in Appendix D.

### Related Literature

The components of effective teaching have been and continue to be of interest to researchers and educators, and over time numerous researchers have developed a variety of frameworks regarding effective teaching. Charlotte Danielson (2002) created four domains of professional practice: planning and preparation, classroom environment, instruction, and professional responsibilities. In 2002, James Stronge developed a framework for effective teaching consisting of six areas: prerequisites of effective teaching, the teacher as a person, the teacher as classroom manager and organizer, organizing for instruction, implementing instruction, and monitoring student progress. Additional frameworks developed by other researchers also exist and are referenced in the comprehensive literature review in Appendix A.

Not surprisingly, despite their structural differences, frameworks of effective teaching share many common characteristics and draw from the same body of research and literature. For the purposes of this project and the related literature review, the research on effective teaching will be organized into three categories:

- **Factors contributing to effective teaching**
- **Professional practices of effective teachers**
- **Professional development to support effective teaching**

Research suggests that the factors contributing to effective teaching include teacher content knowledge, pedagogical training, teacher certification, and teacher experience (Wenglinsky,

2000; Darling-Hammond, 2000, Goldhaber & Brewer, 2000). Professional practices of effective teachers include classroom management and organization, expectations for student behavior, planning and preparation, instruction, and monitoring student progress (Marzano, Marzano, & Pickering, 2003; McLeod et al., 2003). More specifically, effective teachers create environments of respect, establish a culture of learning in the classroom, and manage student behavior. In addition, effective teachers plan and prepare for instruction, maximize instructional time, employ a variety of instructional strategies, communicate content clearly, use a variety of questioning strategies, and have high levels of student engagement (Shellard & Protheroe, 2000; Cruickshank & Haefele, 2001; Wenglinsky, 2000; Covino & Iwanicki, 1996; Zaborik et al., 2003). Finally, research on effective teaching indicates that monitoring student progress and responding to students' needs and abilities are critical for effective instruction (Wenglinsky, 2000; Tomlinson, 1999). This includes providing meaningful feedback to students and differentiating instruction to meet students' needs. Professional development to support effective teaching focuses on the characteristics of effective professional development for teachers. Research suggests that effective professional development is connected with student learning, enhances teachers' content and pedagogical knowledge, is allocated sufficient time and resources for successful implementation, and allows for collegiality and collaboration (Guskey, 2003). These key elements from the literature were used to develop survey items for this study. A comprehensive literature review on effective teaching can be found in Appendix A.

### Survey Instrument

The survey instrument for this study is designed to address the project questions and is based on the body of research related to effective

teaching. The survey is organized into five sections: Hiring Practices, Current Teachers, Professional Development, About This School, and About You. With regard to Hiring and Current Teachers, the survey explores issues in the following areas: Teacher Preparation, Certification, Content and Pedagogical Content Knowledge, Classroom Environment, and Communication, Community, and Growth. These categories and areas are reflected in the literature on effective teaching. In particular, Danielson's *Domains of Professional Practice* and Stronge's *Qualities of Effective Teachers* served as a basis for developing questions related to effective teaching. Literature on characteristics of effective professional development also informed the survey questions.

Our survey instrument draws from two existing surveys. The Schools and Staffing Survey (SASS) is conducted by the US Census Bureau and sponsored by the National Center for Education Statistics (NCES) in order to collect extensive data on American public and private elementary and secondary schools. SASS provides data on the characteristics and qualifications of teachers and principals, professional development, class size, and other conditions in schools across America. Because of the focus of this study, items from the SASS on professional development were used for the survey.

The Schools of Education Research Project at Columbia University explored principals' views of the quality of schools, colleges, and departments of education with a Principal Questionnaire. The questions from this survey regarding factors important in hiring teachers, models for teacher preparation, and principal preferences of teacher preparation programs were adapted for use in our study.

In the first section of the survey, Hiring Practices, Heads are asked to identify the preparation backgrounds of teachers they have hired in the past and those that they prefer. Heads are also

asked how important it is to them that teachers they hire have certification. Scales used in the survey are four-point Likert scales, and the scale for this question is Very Important, Important, Somewhat Important, and Less Important. The same scale is used for Heads to identify the importance of items in the areas of content and pedagogical knowledge, aspects of classroom environment, and communication, community, and growth for teachers they hire.

The second section of the survey, Current Teachers, asks Heads to evaluate their current teachers with regard to content and pedagogical knowledge, classroom environment, and communication, community, and growth. For each area, Heads are asked to identify how well their current teachers do in these areas on a scale of Very Well, Well, Fairly Well, and Not Well.

The third section of the survey, Professional Development, begins by asking Heads to identify the areas in which their teachers have received professional development this year. The same categories are used for Heads to identify their professional development priorities for their teachers. This section also focuses on the nature of professional development by asking Heads to evaluate aspects of professional development in their school, such as planning, delivery, and evaluation, using the scale Always, Frequently, Sometimes, Never. Finally, Heads are asked to identify which groups, such as teachers, administrators, and board members, influence professional development decisions. The scale for this question is Major Influence, Moderate Influence, Mild Influence, and No Influence.

The final section of the survey gathers data about the Heads and their respective schools. Heads are asked to provide current enrollment by giving the actual number, rather than selecting from a range. For presentation in comparisons, the enrollment data were coded according to categories used by the National Association of Independent Schools: Less than 201, 201-300,

301-500, 501-700, and Over 700. Heads are also asked to categorize the school's location (urban, suburban, rural), type (lower, middle, upper), gender, and religious affiliation. Finally, Heads are asked about their own academic backgrounds and teaching experience.

Two comprehensive concept maps for the survey can be found in Appendix B, one that links the literature, survey items, and project questions and one that links survey items and their sources. The complete survey can be found in Appendix C.

### Target Population

The target population for this study is Heads of School in SAIS member schools. SAIS currently has 340 member schools, but seven schools have informed SAIS that they do not wish to receive any surveys. Therefore, the remaining 333 SAIS schools are the target population for this study.

### Research Strategy

Dr. Steve Robinson, President of SAIS, encouraged Heads to participate in the survey during meetings and conferences leading up to the study. The 333 schools received a survey invitation via email and request to complete it online. The survey was created using Survey Monkey, an online survey program, and the link was distributed to SAIS Heads via email. After one week, a follow-up email was sent to Heads who had not yet completed the survey to encourage their participation. After two weeks, the survey was closed.

### Response Rate

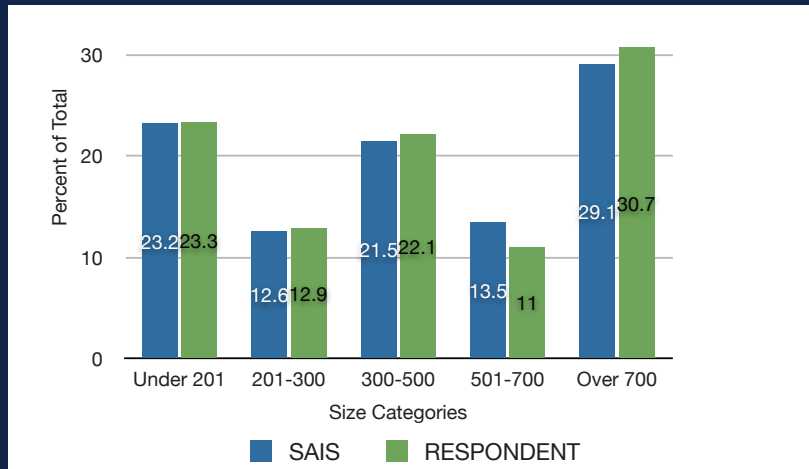
Of the 333 Heads of School who received the survey, 163 completed it, resulting in a response rate of 49%. Trends of independent school response rates for surveys indicate that 49% reflects typical participation by SAIS schools. The National Association of Independent

Schools (NAIS) distributes an annual Stats Online survey to independent schools, and the data are sorted by regional organizations such as SAIS. Over the past three years, the SAIS member school response rate for the NAIS survey has been 50%, 43%, and 49%, which is comparable to the response rate for this study. This provides compelling evidence that the response rate for this study is strong for a research project with SAIS member schools.

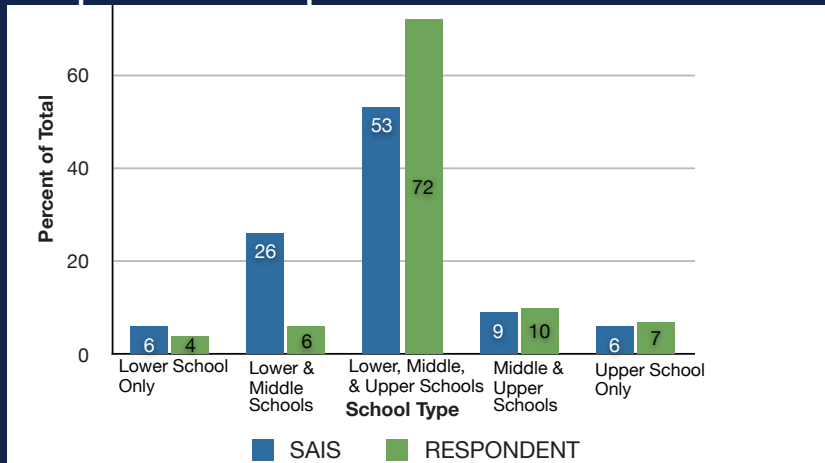
### Respondent and SAIS Member School Characteristics

With a 49% response rate, it is essential to determine whether or not the respondents are representative of the entire population, which in this case is all of the SAIS member schools. SAIS categorizes its schools based on student enrollment, grade levels served, location by state, and co-ed or single-sex. SAIS has schools ranging in size from seven students to over 2,800. For purposes of analysis by school size, we used the breakdown of school size that is used by the National Association of Independent Schools. Regarding grade levels served, 53% of SAIS schools have Lower, Middle, and Upper levels, while 26% are just Lower and Middle, 9% are Middle and Upper, 6% are Upper only, and 6% are Lower only. SAIS has member schools in 11 southeastern states and the Caribbean, with the largest concentrations of SAIS schools in Georgia, North Carolina, and Tennessee, with 34%, 17%, and 16% respectively. Ninety-five percent of SAIS member schools are co-educational, 3% are boys-only and 2% are girls-only. Figures 1-4 show that the 163 participants in this study are representative of the population of SAIS schools across the categories discussed above.

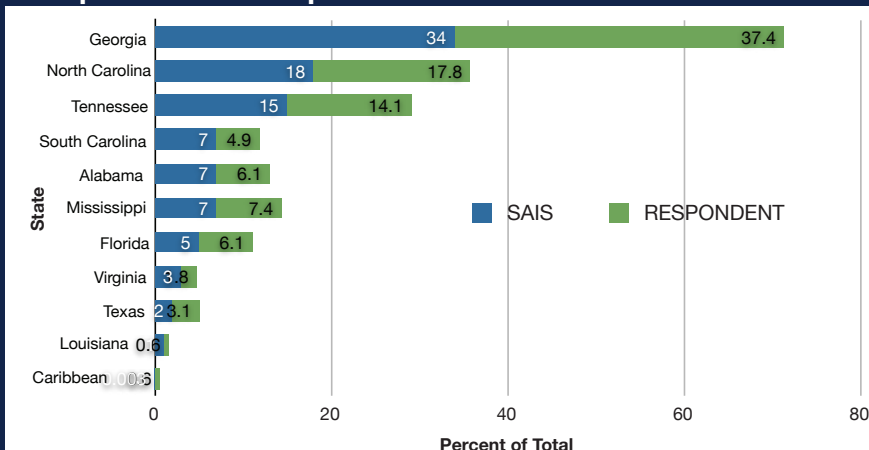
**Figure 1:**  
Comparison of Respondents to SAIS Members by School Size



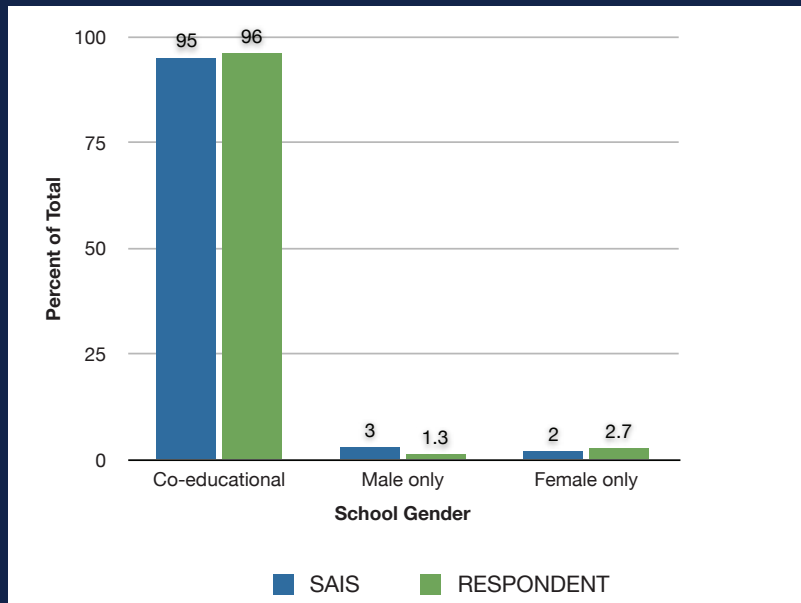
**Figure 2:**  
Comparison of Respondents to SAIS Member Schools by School Type



**Figure 3:**  
Comparison of Respondents to SAIS Member Schools by State

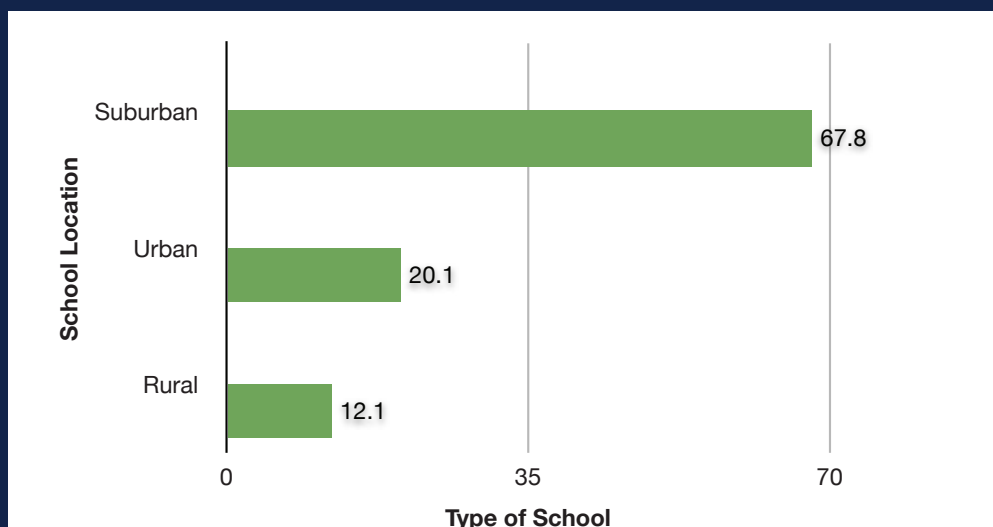


**Figure 4:**  
**Comparison of Respondents to SAIS Member Schools by School Gender**



SAIS does not categorize member schools according to locations such as Rural, Suburban, and Urban. Although we asked survey respondents to categorize their school based on one of those locations, the information is self-evaluated and self-reported and we are not able to compare the Heads’ responses with data to determine if the responses are representative. Figure 5 below shows the respondent percentages by school location.

**Figure 5:**  
**Respondents by School Location**

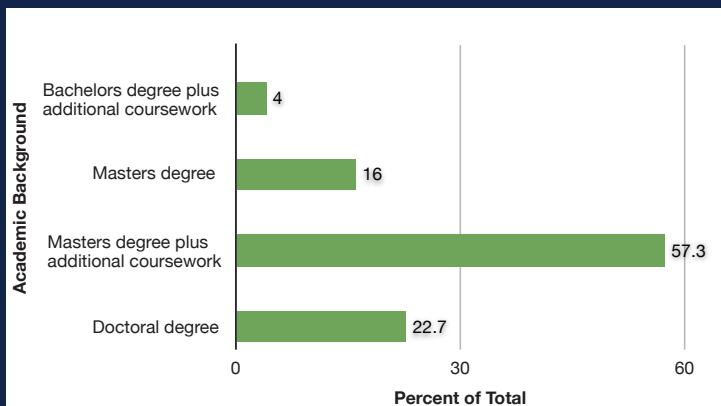




## PROJECT STRATEGY

As indicated, the participating schools appear to be broadly representative of the SAIS population across key characteristics. The respondents were also asked to provide information about their own academic and teaching backgrounds. Background information on the population of administrators is not available from SAIS so a comparison to the entire population is not possible. With few exceptions, the respondents identified themselves using one of the following terms: Head of School, Headmaster, Director, President or Principal. No respondents indicated that a Bachelors degree was their highest level of academic work while fifty-seven percent of the respondents have a Masters degree plus additional coursework.

**Figure 6:**  
**Respondent Academic Background**



Ninety-four percent of the respondents had classroom teaching experience and several indicated that they are still teaching while holding the highest administrative position and their institutions. The mean years of teaching experience is 12.77 years and the data is bi-modal: 10 years and 15 years (Table 1).

**Table 1: Respondent Teaching Experience**

Years of Teaching Experience	Percent of Respondents (N=147)
No experience	6.1
1 - 6 years	24.5
7 - 11 years	20.4
12 - 19 years	28.6
20+ years	20.4
Total	100.0

Survey Question: For how many years were you a classroom teacher before becoming an administrator?

### Data Analysis Plan

This study is exploratory in nature and aims to provide new data to SAIS. Therefore, we view the data and findings from this study as primarily descriptive, providing a new lens through which to examine issues related to effective teaching in independent schools and assess needs related to hiring and professional development. Because SAIS does not have comparable data for a comparative analysis, the data and findings will provide baseline information and establish a foundation for future research.

Data were collected, exported into Excel for initial coding, and then imported into SPSS for additional coding and analysis. Particular analyses were used to address each project question and any related sub-questions. A detailed data analysis plan can be found in Appendix D.



### Project Question Number 1: What factors related to effective teaching are important to SAIS Heads of Schools when hiring teachers?

#### *Hiring Practices and Preferences of Heads of School and Teacher Certification*

##### *Hiring Practices*

Independent schools have the freedom to hire teachers from any educational background they choose; perhaps selecting teachers based on the overall fit for the school rather than for their credentials. When asked from which academic preparation backgrounds they have hired, respondents report having hired those with degree combinations involving undergraduate degrees in academic content areas at higher rates than those with degree combinations involving undergraduate degrees in education. (Table 2) Undergraduate degrees in an academic content area are the most common with 97.5% of respondents indicating hiring followed closely by a 96.8% response rate for applicants with an undergraduate degree in an academic content area combined with a graduate education degree. Undergraduate degrees in education combined with graduate degrees in academic content areas are the least common with 69.1% of respondents indicating hiring. In addition to the traditional combinations provided on the survey respondents indicated that they hired applicants with degrees in Special Education as well as applicants with advanced professional degrees, such as Masters in Business Administration and Juris Doctor.

**Table 2: Degree Combinations Hired By SAIS Heads of School**

Degree Combination	Percent Hired
Undergraduate degree in an academic content area	97.5 (N=157)
Undergraduate degree in education	89.6 (N=154)
Undergraduate degree in an academic content area and advanced degree in an academic content area	92.4 (N=158)
Undergraduate degree in an academic content area and advanced degree in education	96.8 (N=155)
Undergraduate degree in education and advanced degree in education	80.4 (N=148)
Undergraduate degree in education and advanced degree in an academic content area	69.1 (N=149)

Survey Question: Administrators hire teachers with a variety of preparation backgrounds. We would like to know from which backgrounds you have hired and which you prefer.

Analysis of variance (ANOVA) tests are statistical tests that allow examination of differences in means revealed in comparisons of groups of data. When asked whether or not Heads of School hire applicants with undergraduate degrees in education, an ANOVA test reveals significant differences in prior hiring practices by school type,  $F(4, 149) = 12.31, p < .01$ . ANOVA tests were followed up with post hoc Tukey tests to identify significant relationships between groups. Post hoc comparisons indicate that institutions with a Lower School division - Lower only ( $M = 1.00$ ), Lower and Middle ( $M = 1.00$ ), or Lower, Middle, and Upper ( $M = 0.95$ ) - are significantly more likely to hire teachers with undergraduate degrees in education than those with both Middle and Upper divisions ( $M = 0.43$ ),  $p = .000$ . In addition, institutions with Middle and Upper divisions are significantly less likely to hire teachers with undergraduate degrees in education than those with Upper divisions only ( $M = 1.00$ ),  $p = .002$ . (Tables E.1 and E.2)

The results of an ANOVA also show that school type is a factor when considering the likelihood of hiring teachers with both undergraduate and graduate degrees in education,  $F(4, 143) = 10.10, p < .01$ . Institutions with a Lower School division - Lower only ( $M = 1.00$ ), Lower and Middle ( $M = 1.00$ ), or Lower, Middle, and Upper ( $M = 0.86$ ) are significantly more likely to hire teachers with both degrees in education than those with both Middle and Upper divisions ( $M = 0.23$ ),  $p = .000$ . Institutions with Middle and Upper divisions are significantly less likely to hire teachers with both degrees in education than those with Upper divisions only ( $M = 0.73$ ),  $p = .008$ . (Tables E.1 and E.2)

## KEY FINDINGS

### Hiring Preferences

When asked to prioritize from which degrees they prefer to hire, respondents again indicated that content knowledge is most important. (Table 3) The responding Heads of School prefer to hire applicants with undergraduate degrees in an academic content area combined with a graduate degree of either type. Applicants with undergraduate degrees in an academic content area combined with a graduate degree in education were ranked either 1 or 2 by 46.9% of the respondents while a graduate degree in an academic content area fell only slightly lower with 46.7% ranking that degree combination as first or second priority. Hiring applicants with an undergraduate degree in education was given the lowest priority with only 15.6% of Heads ranking it among the top two choices despite the fact that 89.6% of the Heads indicated they have hired applicants with that degree. Heads of School providing addition comments noted that their priorities depended upon the level or division for which they are hiring; different priorities when hiring for lower school and when hiring for upper school. Some Heads of School also indicated that a double major in education and an academic content area would be a desirable combination.

When asked to rank preference of hiring applicants with undergraduate degrees in education, an ANOVA reveals significant differences in hiring preferences by school size,  $F(4, 136) = 3.00, p < .05$ . Post hoc comparisons using a Tukey tests show that institutions with 201-300 students ( $M = 3.94$ ) significantly prefer hiring applicants with undergraduate education degrees compared to institutions of over 700 students ( $M = 5.16$ ),  $p = .044$ . Differences by school size are also evident when considering the preference of applicants with both undergraduate and graduate degrees in education,  $F(4, 133) = 3.26, p < .05$ . Post hoc Tukey tests show indicate that the same relationship holds true as schools with 201-300 students ( $M = 2.61$ ) also significantly prefer to hire applicants with both degrees in education when compared to the largest schools, those with over 700 students ( $M = 4.13$ ),  $p = .009$ . (Tables E.3 and E.4)

Applicants with undergraduate and graduate degrees in an academic content area are among the most likely to be hired. When asked about the preference of hiring these applicants both school size,  $F(4, 132) = 3.61, p < .01$ , and school type,  $F(4, 132) = 3.10, p < .05$ , revealed significant differences through ANOVA tests. Post hoc

**Table 3: Heads of School Hiring Preference by Degree Combination**

Degree Combination	N	M	Mode	SD
Undergraduate degree in an academic content area	139	3.68	5	1.77
Undergraduate degree in education	141	4.54	6	1.56
Undergraduate degree in an academic content area and advanced degree in an academic content area	137	2.88	1	1.65
Undergraduate degree in an academic content area and advanced degree in education	143	2.71	3	1.29
Undergraduate degree in education and advanced degree in education	138	3.59	5	1.69
Undergraduate degree in education and advanced degree in an academic content area	145	3.37	4	1.46

Survey Question: Administrators hire teachers with a variety of preparation backgrounds. We would like to know from which backgrounds you have hired and which you prefer (1 = highest preference, 6 = lowest preference)

## KEY FINDINGS

Tukey comparisons indicate that the smallest institutions - Under 201 ( $M = 3.45$ ) and 201-300 students ( $M = 3.50$ ) - rank applicants with both degrees in academic content areas significantly less desirable for hiring when compared to the largest institutions, those with more than 700 students ( $M = 2.23$ ),  $p = .010$  and  $p = .040$ , respectively. Post hoc comparisons also reveal that institutions with all three divisions ( $M = 3.06$ ) rank applicants with both undergraduate and graduate degrees in academic content areas less desirable than institutions with only Middle and Upper divisions ( $M = 1.82$ ),  $p = .030$ . (Tables E.3 through E.6)

When asked about hiring preferences for applicants with an undergraduate degree in education and a graduate degree in an academic content area, an ANOVA test indicates that Heads' years of teaching experience is important,  $F(4, 128) = 3.18$ ,  $p < .05$ . Post hoc Tukey test results show that respondents with 12-19 years of teaching experience ( $M = 2.90$ ) significantly prefer to hire applicants with this degree combination when compared to respondents who have no classroom teaching experience ( $M = 4.57$ ),  $p = .040$ . (Tables E.7 and E.8)

### Teacher Certification

Teacher certification is an area of particular interest when considering the hiring practices and preferences of SAIS Heads of School. Independent schools have the unique opportunity to hire teachers with or without teaching certification. The literature provides opposing viewpoints of the existence of links between certification and student achievement. When asked how important it is that applicants either hold a current teaching certificate or have held a teaching certificate at some point, the responses were mixed (Table 4). The most frequent response for both questions was Not Important with 32% indicating that a current teaching certificate is not important and 25.8%

indicating that having held a teaching certificate at some point is not important. Interestingly, 42.2% of the respondents said that a current teaching certificate is either Very Important or Important and 44.9% indicate that having held a teaching certificate at some point is either Very Important or Important.

**Table 4: Importance of Teaching Certification When Hiring - Categories by Percent Responding**

Certification status	Very Important	Important	Somewhat Important	Not Important
Holding a current teaching certificate (N=161)	22.4	19.9	24.8	32.9
Having held a teaching certificate at some point(N=147)	17.0	27.9	26.5	28.6

Survey Question: How important is it that teachers you hire (4 = very important, 1 = not important)

Combining responses related to the importance of teaching certification yields a result of 51% of Heads indicating that both holding a current teaching certificate and having held a current teaching certificate at some point is either Very Important or Important.

ANOVA testing reveals that both school size,  $F(4, 156) = 3.41$ ,  $p < .05$ , and school location,  $F(2, 146) = 3.65$ ,  $p < .05$ , are important factors when considering the importance of teacher certification as the level of importance of holding a current teaching certificate. Post hoc comparisons using a Tukey test indicate that the relationship is confined to two categories of school size as Heads from institutions with 301-500 students ( $M = 2.80$ ) indicate that holding a current teaching certificate is significantly more important than those from schools with

## KEY FINDINGS

over 700 students ( $M = 1.92$ ),  $p = .004$ . (Tables E.9 and E.10). Post hoc Tukey comparisons also show that Heads of School at institutions located in rural areas ( $M = 2.94$ ) indicate that holding a current teaching certificate is significantly more important than those located in suburban areas ( $M = 2.18$ ),  $p = .023$ . (Tables E.11 and E.12)

School size,  $F(4, 142) = 2.82$ ,  $p < .05$ , and the level of education of Heads of School,  $F(3, 132) = 3.15$ ,  $p < .05$ , are significant when considering the importance of having held a teaching certificate at some point. Post hoc Tukey comparisons show that SAIS administrators at schools with 301-500 students ( $M = 2.63$ ) find this more important than those at institutions with over 700 students ( $M = 1.91$ ),  $p = .004$ . (Tables 9 and 10) Post hoc tests also indicate that Heads with a Bachelors degree plus additional coursework ( $M = 3.40$ ) respond that having held a teaching certificate at some point is significantly more important than their peers with a Doctorate ( $M = 1.97$ ),  $p = .028$ . (Tables E.13 and E.14)

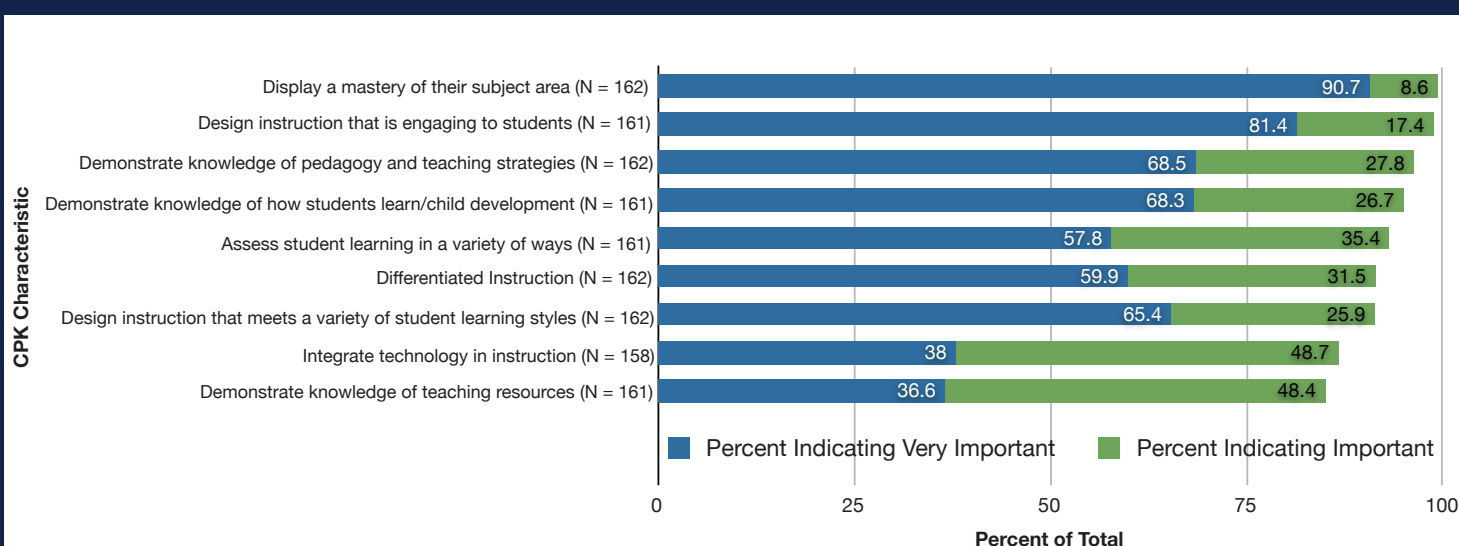
### Teacher Professional Practices

Heads of School were asked to indicate the importance of items in three areas - Content and Pedagogical Knowledge (CPK), Classroom Environment (CE), and Community, Communication, and Growth (CCG). The information on levels of importance is essential as it will be compared to responses from Project Question 2 about the performance of current teachers in the same categories to determine possible areas of need for professional development.

#### Importance of Content and Pedagogical Knowledge

In the Content and Pedagogical Knowledge area 99.4% of respondents indicate that teachers displaying a mastery of their subject matter is either Very Important or Important and 98.8% score designing instruction that is engaging to students in those same categories (Figure 7). Teachers integrating technology in instruction and demonstrating knowledge of teaching resources are the lowest of importance yet 86.7% and 85% of Heads, respectively, indicated that these characteristics are Very Important or Important.

**Figure 7:**  
Importance of Content and Pedagogical Knowledge (CPK)



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Analysis of variance testing revealed that school location,  $F(2, 146) = 3.00$ ,  $p < .05$ , is significant when considering the importance of demonstrating knowledge of pedagogy and teaching strategies. Post hoc Tukey tests show that Heads of Schools at institutions located in suburban areas ( $M = 3.59$ ) find demonstrating this knowledge to be significantly less important than those in urban areas ( $M = 3.87$ ),  $p = .041$ . (Tables E.15 and E.16) In addition to school location, Heads of School academic background,  $F(3, 145) = 2.59$ ,  $p < .10$ , is also a strong factor when considering the importance of teachers demonstrating knowledge of pedagogy and teaching strategies. Post hoc Tukey comparisons show that respondents with Masters degrees ( $M = 3.92$ ) indicate that this demonstration of knowledge is significantly more important than respondents with Doctoral degrees ( $M = 3.53$ ). (Tables 17 and 18)

Significant differences by the academic background of responding administrators  $F(3, 145) = 3.84$ ,  $p < .05$ , are also revealed by ANOVA testing on the importance of differentiation of instruction to meet a variety of student abili-

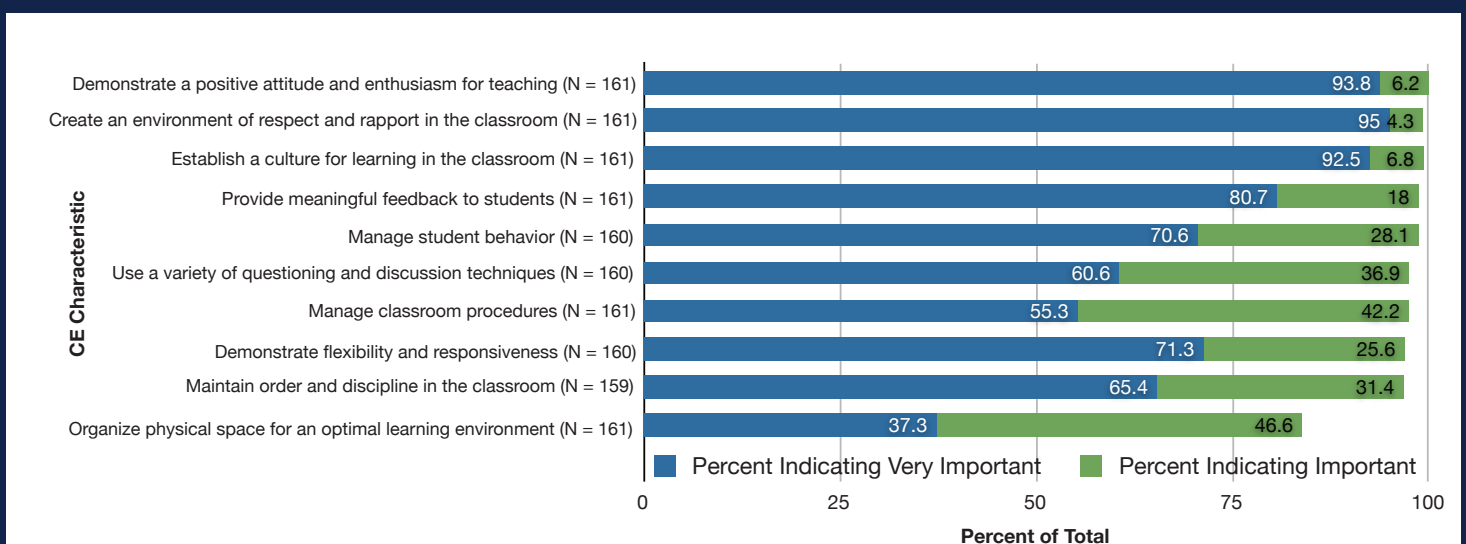
ties. As was the case in the previous category, those with Masters degrees ( $M = 3.79$ ) indicated that differentiating instruction is significantly more important than respondent with Doctoral degrees ( $M = 3.29$ ),  $p = .026$ . (Tables E.17 and E.18)

ANOVA testing also shows that school type,  $F(4, 156) = 3.10$ ,  $p < .05$ , is significant when considering the importance of demonstrating knowledge of how students learn and child development however post hoc testing did not reveal the source of that relationship. (Table E.19)

### Importance of Classroom Environment

The results from the CE section are similar to CPK in that the majority of responses for all of the items fall into the Very Important and Important categories (Figure 8). All of the Heads of School indicate that teachers creating an environment of respect and rapport is either Very Important or Important and all Heads, with one exception, indicated a high level of importance for demonstrating a positive attitude and enthusiasm. Organizing physical space for an optimal learning environment was indicated to be the item of lowest importance yet still 83.9% of

**Figure 8:**  
**Importance of Classroom Environment (CE)**





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Heads of School ranked it as being Very Important or Important.

When considering the importance of teachers creating an environment of respect and rapport in the classroom, ANOVA testing revealed significant differences by school type,  $F(4, 156) = 4.22$ ,  $p < .01$ . Post hoc Tukey comparisons show that administrators at SAIS institutions having an Upper School only ( $M = 3.67$ ), find creating an environment of respect and rapport in the classroom to be significantly less important than those with more than one division - Lower and Middle Schools ( $M = 4.00$ ),  $p = .021$ , Lower, Middle and Upper Schools ( $M = 3.97$ ),  $p = .001$ , and Middle and Upper Schools ( $M = 3.94$ ),  $p = .029$ . (Tables E.20 and E.21)

Significant differences by school size,  $F(4, 156) = 6.67$ ,  $p < .01$ , were found when testing the importance of demonstrating a positive attitude and enthusiasm for teaching. Post hoc Tukey comparisons reveal that responding Heads of School at institutions with between 201-300 students ( $M = 3.71$ ) indicate that attitude and enthusiasm is significantly less important than respondents at schools in all other categories of size - under 200 students ( $M = 4.00$ ),  $p = .006$ , 301-500 students ( $M = 3.91$ ),  $p = .014$ , 501-700 students ( $M = 4.00$ ),  $p = .001$ , and over 700 students ( $M = 3.98$ ),  $p = .006$ . (Tables E.22 and E.23)

ANOVA testing shows that Heads of School academic background,  $F(3, 144) = 3.47$ ,  $p < .05$ , results in significant differences in the indication of importance of organizing physical space for an optimal learning environment. Post hoc Tukey tests results reveal that respondents with Masters degrees ( $M = 3.58$ ) find organizing physical space for an optimal learning environment is significantly more important than respondents with Masters degrees plus addition-

al coursework ( $M = 3.10$ ),  $p = .018$ . A second ANOVA shows the same to be true - differences by Head of School academic background,  $F(3, 143) = 2.62$ ,  $p < .10$  - when considering the importance of using a variety of questioning and discussion techniques. Post hoc comparisons indicate that Heads of School with Masters degrees ( $M = 3.83$ ) find that this element is significantly more important than those with Masters degrees plus additional coursework ( $M = 3.49$ ),  $p = .033$ . (Tables E.24 and E.25)

### *Importance of Communication, Community, and Growth*

According to the responses of the Heads of School the CCG items are all important. One hundred percent of responding Heads of School indicated that communicating clearly and accurately with both students and parents as well as showing professionalism are Very Important or Important. While contributing to the overall school community is the lowest rate of importance in Figure 9, still 95.7% of responding Heads indicated that item to be Very Important or Important.

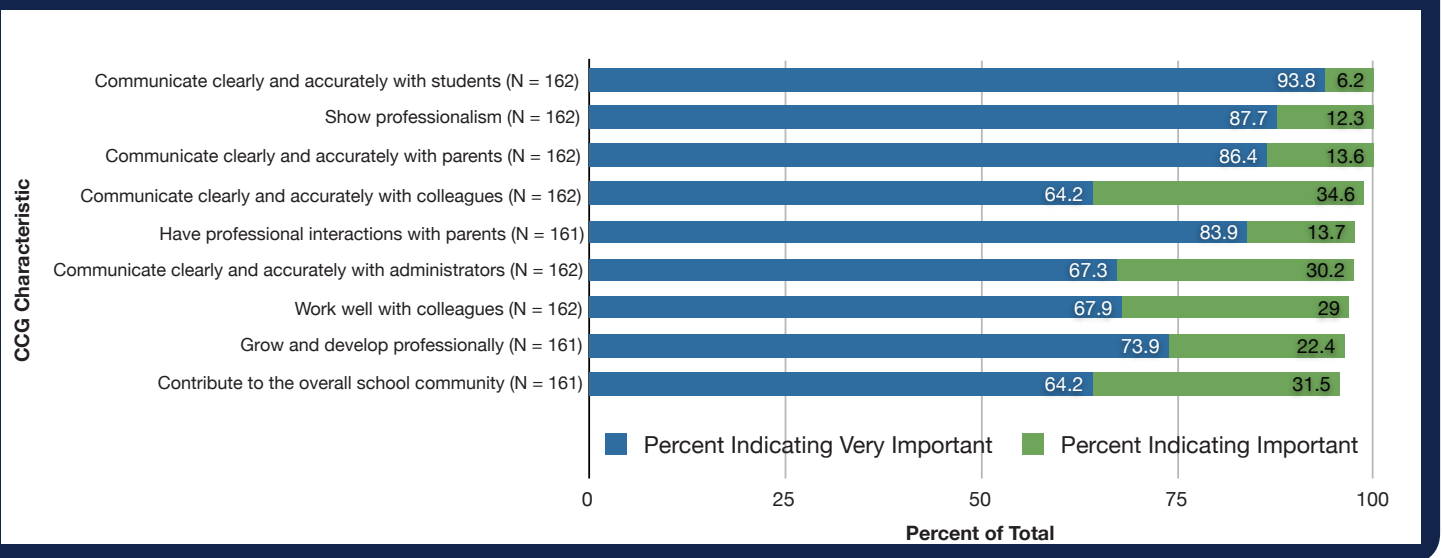
ANOVA testing on the importance of working well with colleagues reveal significant differences by school type,  $F(4, 157) = 2.63$ ,  $p < .05$ , and by Head of School academic background,  $F(3, 145) = 2.80$ ,  $p < .05$ . Post hoc comparisons using a Tukey test reveal that Heads of School from institutions with all three division levels ( $M = 3.70$ ) indicate that working well with colleagues is significantly more important than those from institutions with Upper Schools only ( $M = 3.25$ ),  $p = .042$ . Post hoc testing also reveals that working well with colleagues is significantly more important to respondents with Masters degrees ( $M = 3.88$ ) than those with Doctoral degrees ( $M = 3.47$ ),  $p = .023$ . (Tables E.26 through E.29)

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Head of School academic background,  $F(3, 145) = 4.10$ ,  $p < .01$ , was also found to be significant when testing the importance of contributing to the overall school community. Post hoc Tukey comparisons reveal that SAIS administrators with Masters degrees ( $M = 3.92$ ) find this contribution to be significantly more important than respondents with Doctoral degrees ( $M = 3.38$ ),  $p = .004$ . (Tables E.28 and E.29) An additional

ANOVA was performed on the importance of growing and developing professionally, revealing differences by school size,  $F(4, 156) = 2.94$ ,  $p < .05$ . (Table E.30) However, post hoc testing did not reveal the source of that relationship.

**Figure 9:**  
Importance of Community, Communication and Growth





**Project Question Number 2:  
What are SAIS Head’s perceptions  
of the extent to which their  
current teachers demonstrate  
effective teaching practices?**

Using the same categories of Professional Practices discussed above - Content and Pedagogical Knowledge, Classroom Environment, and Community, Communication, and Growth - the Heads of School were asked to indicate their perceptions of how well their current teachers perform. Notable differences between the level of perception discussed in Project Question 1 and the level of performance are identified as possible areas of attention for SAIS member schools.

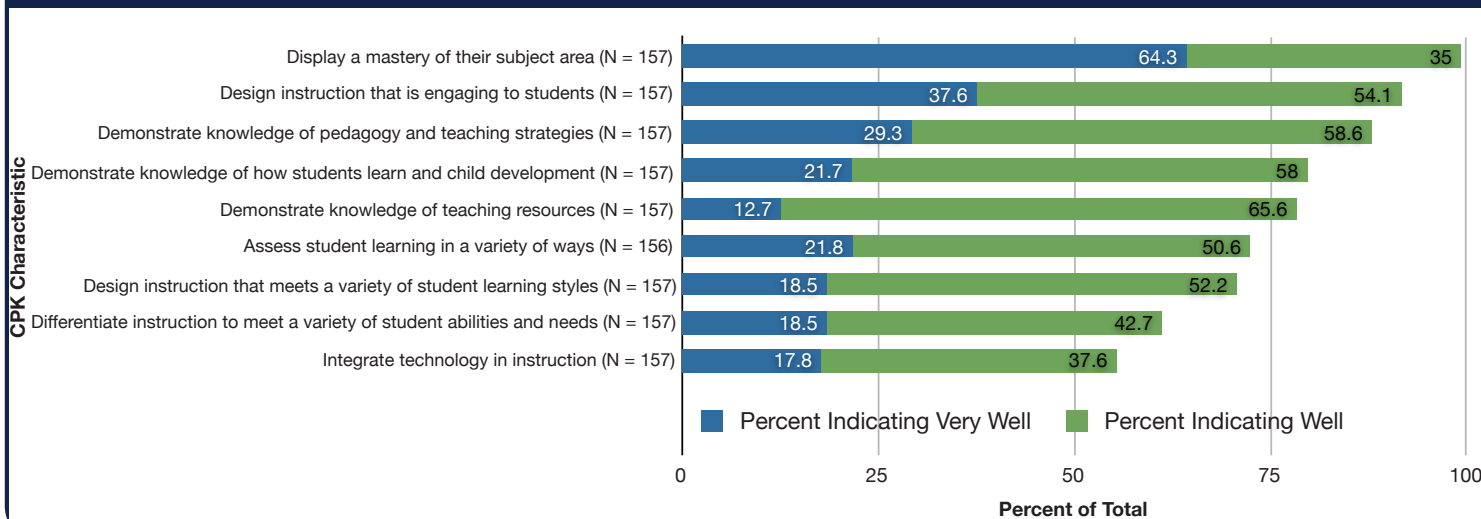
*Current Teacher Performance in Content and Professional Knowledge*

Displaying a mastery of their subject area is the CPK item considered most important by SAIS Heads of School. This item also received high marks when Heads of School were asked how well their current teachers display a mastery of their subject area as 99.7% of respondents answered

Very Well or Well (Figure 10). The lowest scoring item in the CPK section is integrating technology in instruction with 55.4% of SAIS administrators answering Very Well or Well and 39.5% responding Fairly Well. Given that 85% of respondents indicated that integrating technology is important there is a gap between the Heads indication of importance and perception of level of performance of current teachers.

When considering how well current teachers demonstrate knowledge of how students learn and child development, ANOVA test results indicate that school type,  $F(4, 152) = 2.67, p < .05$ , plays a significant role. Post hoc Tukey comparisons reveal that Heads of School at institutions with Lower Schools only ( $M = 3.50$ ) indicate that their current teachers demonstrate knowledge of how students learn and child development at a significantly higher level than those from institutions with Middle and Upper School divisions ( $M = 2.59$ ),  $p = .035$ . (Tables E.31 and E.32) A second ANOVA on this CPK item shows that Heads’ academic background,  $F(3, 144) = 2.98, p < .05$ , is significant however post hoc testing does not reveal the source of this relationship. (Table E.33)

**Figure 10:  
Heads of School perceptions of how well their current teachers perform - Content and Pedagogical Knowledge**



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An ANOVA reveals that school size,  $F(4, 152) = 2.76$ ,  $p < .05$ , is also significant when considering how well current teachers design instruction that meets a variety of student learning styles. Post hoc Tukey tests results indicate that Heads of School at institutions with Lower Schools only ( $M = 3.50$ ) rank the level of their current teachers' instructional design significantly higher than those at institutions with Middle and Upper Schools ( $M = 2.47$ ),  $p = .021$ . (Tables E.31 and E.32)

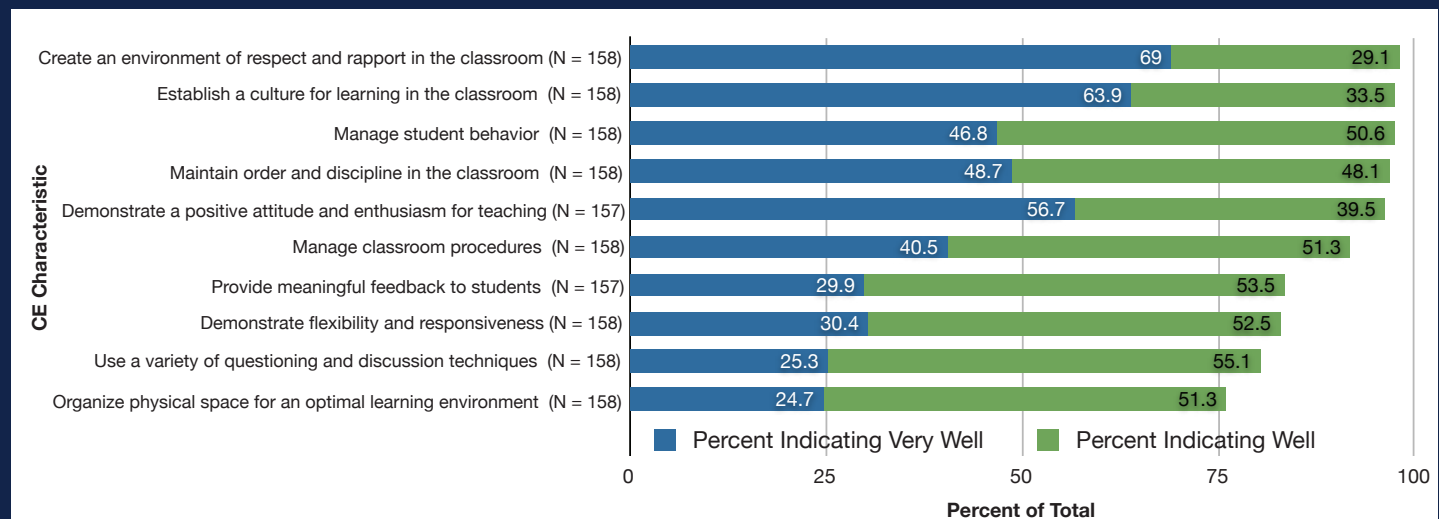
How well current teachers integrate technology in instruction is the focus of several significant differences in the CPK section. The results of separate ANOVA tests reveal that significant differences exist by school size,  $F(4, 152) = 3.58$ ,  $p < .01$ , school location,  $F(2, 145) = 3.06$ ,  $p < .05$ , and Head of School academic background,  $F(3, 144) = 3.23$ ,  $p < .05$ . Post hoc Tukey comparisons show that Heads of School of institutions in the two smallest categories of school size - under 200 ( $M = 2.41$ ) and 201-300 students ( $M = 2.35$ ) - indicate that their current teachers integrate technology in instruction at a significantly lower level than respondents from the largest schools ( $M = 2.96$ ),  $p =$

.016 and  $p = .038$ , respectively. (Tables E.34 and E.35) Tukey results also show that Heads of School of institutions located in rural areas ( $M = 2.29$ ) indicate that their current teachers integrate technology in instruction at a significantly lower level than institutions located in urban areas ( $M = 2.90$ ),  $p = .028$ . (Tables E.36 and E.37) While a relationship exists between the perceived level of teachers integrating technology in instruction and the academic background of Heads of School post hoc testing did not reveal the source of that relationship. (Table E.33)

### *Current Teacher Performance in Classroom Environment*

In the CE section, creating an environment of respect and rapport in the classroom is the item Heads of School indicate teachers perform well at the highest rate just as they indicate that this item is most important in classroom environment professional practices (Figure 11). More than 98% of the responding Heads scored their current teachers in creating such an environment as Very Well or Well. Seventy-six percent of SAIS administrators indicate that their current teachers organizing physical space for

**Figure 11:**  
Heads of School perceptions of how well their current teachers perform -  
Classroom Environment



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an optimal learning environment either Very Well or Well giving the item the lowest percentage CE score. This item is also considered to be least important by responding Heads of School.

An analysis of variance reveals that school type,  $F(4, 153) = 3.72$ ,  $p < .01$ , is significant when considering the current teachers' level of organizing physical space for an optimal learning environment. Post hoc Tukey test results show that respondents from institutions with Lower Schools only ( $M = 3.67$ ) indicate that their current teachers organize physical space for an optimal learning environment significantly better than those from institutions with Middle and Upper School divisions ( $M = 2.71$ ),  $p = .036$ , and those with only Upper Schools ( $M = 2.64$ ),  $p = .035$ . (Tables E.38 and E.39)

The results of an ANOVA show that school location,  $F(4, 145) = 4.49$ ,  $p < .05$ , is important when considering the level of meaningful feedback teachers provide to students. Post hoc comparisons reveal that Heads of School from institutions located in rural areas ( $M = 2.83$ ) indicate that their current teachers provide meaningful feedback to students at a significantly lower level than those from institutions located in urban areas ( $M = 3.41$ ),  $p = .014$ . (Tables E.40 and E.41) A second ANOVA on this item reveals that Heads' academic background,  $F(3, 144) = 2.83$ ,  $p < .05$ , is also tied to providing meaningful feedback to students. Post hoc Tukey tests show that respondents with Masters degrees ( $M = 3.46$ ) report that their current teachers provide meaningful feedback at a significantly higher level than the current teachers of respondents with Doctoral degrees ( $M = 2.94$ ),  $p = .027$ . (Tables E.42 and E.43)

Another ANOVA shows that school location,  $F(2, 146) = 6.14$ ,  $p < .01$ , is also a factor when considering the level of demonstrating flexibility and responsiveness by current teachers. Post

hoc Tukey results show that Heads from institutions located in suburban areas ( $M = 3.00$ ) rate their current teachers at a significantly lower level of flexibility and responsiveness when compared to the responses of administrators from institutions located in urban areas ( $M = 3.47$ ),  $p = .002$ . (Tables E.40 and E.41)

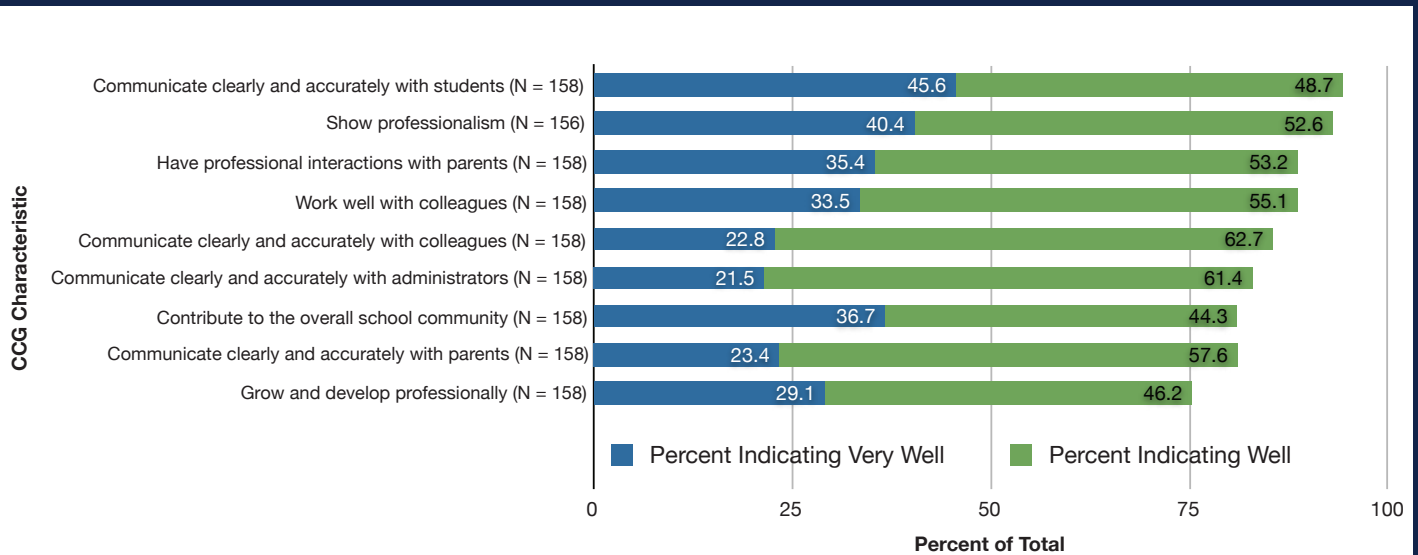
### *Current Teacher Performance in Communication, Community, and Growth*

As was the case with levels of importance as indicated by Heads of School, communicating clearly and accurately with students is the highest performance item in the CCG section with 94.3% of respondents indicating that current teachers communicate Very Well or Well with students (Figure 12). Growing and developing professionally is the item that Heads of School indicate their current teachers perform least well with 75.3% choosing Very Well or Well. While this is one of the lowest items of importance according to responding Heads of School, a gap exists as 96.3% indicated that this growth and development is either Very Important or Important.

Differences in responses between administrators from suburban and urban areas lead the CCG section when considering relationships between professional practices and school characteristics. Analysis of variance reveals that school location,  $F(2, 146) = 3.70$ ,  $p < .05$ , is significant when considering the performance level of current teachers in communicating clearly and accurately with colleagues. Post hoc Tukey comparisons show that respondents from institutions located in suburban areas ( $M = 2.99$ ) indicate that their current teachers communicate significantly less clearly and accurately with colleagues, than those from schools located in urban areas ( $M = 3.33$ ),  $p = .027$ . A second ANOVA in this section shows that school location,  $F(2, 144) = 3.92$ ,  $p < .05$ , is also significant when considering the current teachers' level of showing professionalism. As

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**Figure 12: Heads of School perceptions of how well their current teachers perform - Community, Communication and Growth**



with the previous post hoc comparisons, Heads of School at institutions located in suburban areas ( $M = 3.22$ ) rank their teachers significantly lower in this area than their counterparts in school located in urban areas ( $M = 3.57$ ),  $p = .016$ . (Tables E.44 and E.45)

Growing and developing professionally was the item ranked the lowest in performance of current teachers by Heads of School. Results of a final ANOVA test in this section reveal that school size,  $F(4, 153) = 3.48$ ,  $p < .01$ , is a significant factor in these rankings. Post hoc Tukey comparisons show that respondents from the smallest schools, those with under 201 students ( $M = 2.79$ ), indicate that their current teachers grow and develop professional at a significantly lower level than their peers at institutions with over 700 students ( $M = 3.29$ ),  $p = .020$ . (Tables E.46 and E.47)

### Project Question Number 3: What is the nature of professional development related to effective teaching in SAIS schools?

Based on our findings from the literature, the researchers developed 12 categories of professional development topics that relate to effective teaching. SAIS administrators were asked to report which types of professional development training their teachers had received in the current school year. The percent of administrators who reported offering each was calculated and is displayed in Figure 13.

Seventy-seven percent of SAIS administrators reported offering training in the development of content knowledge. Content knowledge training was offered by more schools than any other topic. Also offered by the majority of schools was training in assessment, which 73% of the administrators reported offering.

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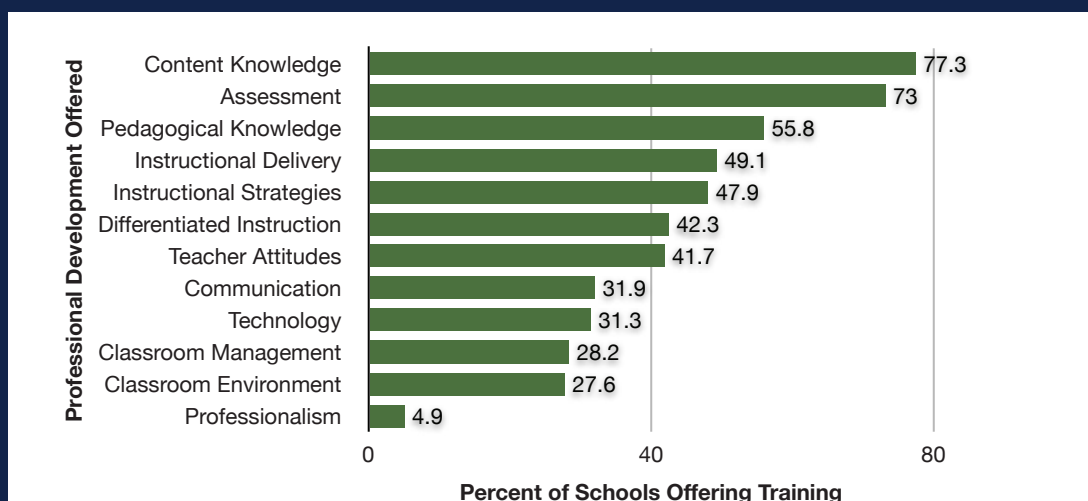
Slightly more than half of the schools (56%) offered training in the development of pedagogical knowledge, and roughly half of the schools offered training in instructional delivery and planning for instruction (49% and 48%, respectively). The least number of administrators reported offering training in professionalism, at just 5% of the total.

In addition to gathering data about what is offered, it was also important to understand the nature of professional development activities in SAIS schools. Informed by the literature on best practices for developing professional development programs and activities, a list of characteristics of professional development was generated. Administrators were asked to report on a four-point Likert scale how often their school's professional development activities related to each of the characteristics.

Mean scores for the frequency with which these characteristics were prevalent in professional development training were calculated. The range in these mean frequencies was small (0.99). Professional development was most often planned by administrators or other support staff ( $M = 2.98$ ,  $SD = .53$ ), corresponding to “Fre-

quently” on the scale. Also occurring about as frequently was professional development that was designed for teachers and administrators to participate together ( $M = 2.93$ ,  $SD = .80$ ). A paired samples t-test revealed the differences in means between “Professional development most often planned by administrators or other support staff” and all other activities were statistically significant at the  $p = .000$  level, except when matched with professional development designed for teachers and administrators to participate together ( $t(145) = -1.032$ ,  $p = .304$ ). The characteristic reported with the least frequency was professional development evaluated for evidence of effects on student achievement ( $M = 1.99$ ,  $SD = .77$ ), but was still scarcely one point from the characteristic with the highest mean frequency. Results from a paired samples test comparing “Professional development evaluated for evidence of effects on student achievement” across all other categories revealed statistically significant differences at the  $p = .009$  level or lower. The low variance among these statistics reveals that in general, SAIS administrators are incorporating these best practices in their program development at least some of the time.

**Figure 13:**  
**Professional Development Offered**





**Table 5: Characteristics of Professional Development Offered to Teachers**

Characteristics of PD	N	Mean	SD
Planned by administrators or other support staff	149	2.98	.53
Designed for teachers and administrators to participate together	148	2.93	.80
Delivered by administrators or other support staff	150	2.60	.57
Accompanied by the resources that teachers need	148	2.56	.69
Planned by teachers	150	2.35	.61
Delivered by teachers	147	2.30	.60
Delivered by an outside organization (school is not involved in planning or delivery)	149	2.26	.60
Evaluated for evidence of improvement in teacher classroom practice	147	2.12	.84
Evaluated for evidence of effects on student achievement	148	1.99	.77

Survey Question: How often is professional development for teachers at this school  
(1 = Always, 4 = Never)

While the data from SAIS administrators revealed interesting patterns in how professional development is offered at their schools, researchers were also interested in whether further analysis would indicate variance in these findings based on characteristics of their schools. If such differences exist, SAIS could use the data to target specific schools in efforts to improve delivery of professional development for teachers. Analysis of variance (ANOVA) tests were conducted using school size and school location as the independent variables and the professional development characteristics as dependent variables.

When hen asked if professional development is planned by teachers, an ANOVA test revealed

significant differences in SAIS administrators' responses based on their school size  $F(4, 145) = 1.33, p < .05$ . A post-hoc Tukey test revealed that teachers in schools with over 700 students ( $M = 2.57$ ) are more likely to have professional development planned by teachers than schools with less than 201 students ( $M = 2.06$ ),  $p = .002$ . Additionally, significant differences were found based on school size when considering professional development that is *delivered* by teachers ( $F(4, 142) = 1.07, p < .05$ ). Schools with over 700 students ( $M = 2.57$ ) were found to be more likely to have professional development *delivered* by teachers than schools with less than 201 students ( $M = 2.06$ ),  $p = .01$ . No other significant relationships were revealed between professional development characteristics and school size or school location. (Tables E.50 and E.51)

A second ANOVA test was conducted using professional development characteristics as the independent variable, and SAIS Heads' backgrounds as the dependent variable. Researchers were interested in whether the nature of the professional development offered was related to the Heads' degree levels. If data indicated a difference in the nature of professional development that was related to Heads' amount of schooling, SAIS could target support and training to specific groups based on their academic backgrounds. The test revealed several significant relationships between Heads' degree level and professional development planned by teachers,  $F(3, 144) = 2.81, p < .05$ , and professional development planned by administrators or other support staff,  $F(3, 143) = 2.74, p < .05$ .

Tukey tests revealed that SAIS administrators with a Masters degree plus additional coursework ( $M = 2.39$ ) or Doctoral degree ( $M = 2.39$ ) were more likely to offer professional development that was planned by teachers than SAIS administrators with a Bachelors degree plus

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additional coursework ( $M = 1.67$ ),  $p = .027$  and  $p = .037$ , respectively. The tests also show that administrators with a Bachelors degree plus additional coursework ( $M = 3.50$ ) are more likely to offer professional development that is planned by administrators or other support staff than administrators with a Masters degree ( $M = 2.83$ ),  $p = .029$ . (Tables E.50 and E.51)

A final ANOVA was conducted on this set of data to examine the relationship between the nature of professional development and SAIS Heads' years of teaching experience. Specifically, researchers were interested in whether years of teaching experience, or none at all, impacted how professional development was offered in SAIS schools. The ANOVA revealed significant relationships between years of teaching experience and professional development evaluated for evidence of improvement in teacher classroom practice  $F(4, 137) = 3.36$ ,  $p < .05$ ; years of experience and professional development evaluated for evidence of effects on student achievement  $F(4, 138) = 3.23$ ,  $p < .05$ ; and years of experience and professional development accompanied by the resources that teachers need,  $F(4, 138) = 4.13$ ,  $p < .01$ .

Further analysis with a Tukey test provided additional information about the nature of these relationships. SAIS administrators with more than 20 or more years of experience ( $M = 2.48$ ) were more likely to have professional development evaluated for evidence of improvement in teacher classroom practice than administrators with 0-6 years of teaching experience ( $M = 1.88$ ) or no teaching experience at all ( $M = 1.50$ ),  $p = .036$  and  $p = .027$ , respectively. Additionally, the SAIS administrators with 20 or more years of teaching experience ( $M = 2.31$ ) were more likely to offer professional development that was evaluated for evidence of effects on student achievement than administrators with 0-6 years of experience ( $M = 1.74$ ),  $p = .033$ . Lastly, SAIS administrators with 7-11 years of teaching experience ( $M = 2.77$ ) or 20 or

more years of teaching experience ( $M = 2.83$ ) were more likely to offer professional development that was accompanied by the resources that teachers need than administrators with 0-6 years of teaching experience ( $M = 2.29$ ),  $p = .044$  and  $p = .017$ , respectively. A complete list of test results is provided in Tables E.52 and E.53.

Another key component of the literature on professional development programs relates to the involvement of stakeholders in the decisions about professional development offerings. Administrators were asked to report the level of influence of Heads of School or Administration, Teachers, Curriculum Specialists, Parents, Governing Board, and Others on decisions about the content of professional development for teachers. Using a four point Likert scale of 1(No Influence) - 4 (Major Influence), Heads of school reported having the most influence ( $M = 3.79$ ,  $SD = .43$ ). Teachers also had a significant level of influence ( $M = 3.44$ ,  $SD = .60$ ), while governing boards had the least amount of influence ( $M = 1.37$ ,  $SD = .74$ ).

Interestingly, the mean level of influence for curriculum specialists was 2.23, with a standard deviation of more than one point ( $SD = 1.5$ ). This relatively high variation suggests a wide range of levels of influence for a group that one might expect to exercise considerable influence on the professional development offerings. Table 6 details the findings across all 6 groups.

**Table 6: Level of Influence**

Decision-Making Group	Mean	SD
Head of School/ Administration	3.79	.43
Teachers	3.44	.60
Curriculum Specialists	2.23	1.46
Parents	1.55	.68
Governing board	1.37	.74

Survey Question: How much influence do the following groups or individuals have on decisions related to the content of professional development for teachers at this school?

## KEY FINDINGS

Taking these findings concerning level of influence on professional development offerings, we considered whether relationships existed between any characteristics of the SAIS administrators' schools and the groups that most influenced decisions about professional development content. ANOVA tests were conducted using the individual groups with influence as the dependent variable, and school location, school size, and religious affiliation as independent variables.

There was a significant difference in levels of influence based on whether the administrator classified his/her school as rural, urban, or suburban,  $F(2, 145) = 3.14, p < .05$ . The means and standard deviations are presented in Table E.54. Post hoc comparisons using the Tukey tests revealed that Heads of school/administration in rural schools ( $M = 4.00$ ) have a greater influence on decisions about professional development content than Heads of school/administration of suburban schools ( $M = 3.74$ ),  $p = .043$ . (Table E.55) As SAIS considers the needs of their administrators, special consideration

may need to be given to administrators in rural schools. No other significant relationships were found.

A second ANOVA test was conducted to determine whether a relationship exists between Heads' backgrounds and who influences decisions about the content of professional development in their schools. A significant difference was revealed in groups of years of experience,  $F(4,141) = 2.79, p < .05$ . Tukey tests show that Heads with no teaching experience ( $M = 2.89$ ) receive input from teachers on professional development decisions less than those who have 12-19 years of teaching experience ( $M = 3.55$ ),  $p = .021$ . This same relationship exists between Heads with no teaching experience and teachers who have 20 or more years of teaching experience ( $M = 3.53$ ),  $p = .034$ . These ANOVA statistics, with means and standard deviations, are reported in (Tables E.56 and E.57)



**Project Question Number 4:  
What are SAIS Heads' priorities for  
teacher professional development?**

SAIS administrators were asked to consider their current teachers and choose their top 3 priorities for professional development. The categories were the same as those provided when Heads were asked to report on the professional development they have already offered this year. Researchers were concerned with two pieces of data in the preliminary analysis of the data: 1) the percentage of responses for each category and 2) the mean of the responses for each category. While the percent of responses reveals the proportion of Heads ranking the professional development category as a priority, the mean of the responses indicates the level of priority with 1 being the highest and 3 being the lowest.

The categories receiving the most rankings as a priority for professional development were Development of Pedagogical Knowledge (63%) and Planning for Instruction (61.4%). Instructional Delivery was also chosen often as a priority (53.8%). The fewest number of responses were received in categories for Other (3.2%), Maintaining Order and Discipline (8.7%), and Management of Classroom Environment (6.5%).

Another indicator of priorities for professional development is the mean value of the rankings for each category. Development of Pedagogical Knowledge is the clear priority for SAIS Heads of school ( $M = 1.62$ ,  $SD = .812$ ), while other instructional-related categories also appear to be high priorities (Instructional Delivery,  $M = 1.75$ ,  $SD = .714$ ; Development of Content Knowledge,  $M = 1.79$ ,  $SD = .781$ ; Planning for Instruction,  $M = 1.79$ ,  $SD = .813$ ). SAIS Administrators ranked Communication lowest on the list of priorities ( $M = 2.39$ ). These results reveal an emphasis on instruction in SAIS schools, where priorities for professional development, regardless of the measure, relate to instructional concerns. A complete list of the descriptive statistics for each category is reported in Table 7.

Researchers used ANOVA tests to identify whether priorities for professional development were impacted at all by factors such as school size, school type, or school location. There does in fact appear to be a relationship between school location and SAIS Heads' priorities for professional development, ( $F(2, 10) = 6.89$ ,  $p < .05$ ). A post-hoc Tukey test revealed that urban schools ( $M = 3.00$ ) were much more likely than rural schools ( $M = 1.00$ ),  $p = 0.10$ , to report Management of Classroom Environment as a professional development priority. These results are reported in Tables E.58 and E.59. No other relationships were found to be significant.

Researchers used ANOVA tests to identify whether priorities for professional development were impacted at all by factors such as school size, school type, or school location. There does in fact appear to be a relationship between school location and SAIS Heads' priorities for professional development, ( $F(2, 10) = 6.89$ ,  $p < .05$ ). A post-hoc Tukey test revealed that urban schools ( $M = 3.00$ ) were much more likely than rural schools ( $M = 1.00$ ),  $p = 0.10$ , to report Management of Classroom Environment as a professional development priority. These results are reported in Tables E.58 and E.59. No other relationships were found to be significant.

**Table 7: Professional Development Priorities**

PD Categories	N (Number of Respondents)	% Respondents	M	SD
Development of Pedagogical Knowledge, i.e. teaching strategies, how students learn, and use of teaching resources	63	63	1.62	.812
Instructional Delivery, i.e. differentiating instruction, using a variety of questioning and discussion techniques, providing meaningful feedback to students	57	53.8	1.75	.714
Development of Content Knowledge	33	25	1.79	.781
Planning for Instruction, i.e. designing instruction that is engaging, addresses a variety of learning styles	62	61.4	1.79	.813
Teacher Attitudes, i.e. demonstrating enthusiasm for teaching, flexibility, responsiveness	21	14.8	2.10	.700
Assessing Student Learning	40	32.5	2.18	.712
Designing instruction that meets a variety of student learning styles	51	45.5	2.22	.808
Integrating Technology into Instruction	49	42.3	2.22	.823
Management of Classroom Environment, i.e. establishing culture of learning, environment of respect and rapport	13	8.7	2.23	.832
Professionalism, i.e. working well with parents and colleagues, contributing to the school community, growing and developing in the profession	21	14.8	2.29	.784

Survey Question: Thinking about your current teachers, which of the following would be your priorities for professional development? Please rank your top three areas 1-3 with 1 most important.

**Project Question Number 5:  
To what extent are Heads' priorities for professional development aligned with the strengths and weaknesses of their teachers?**

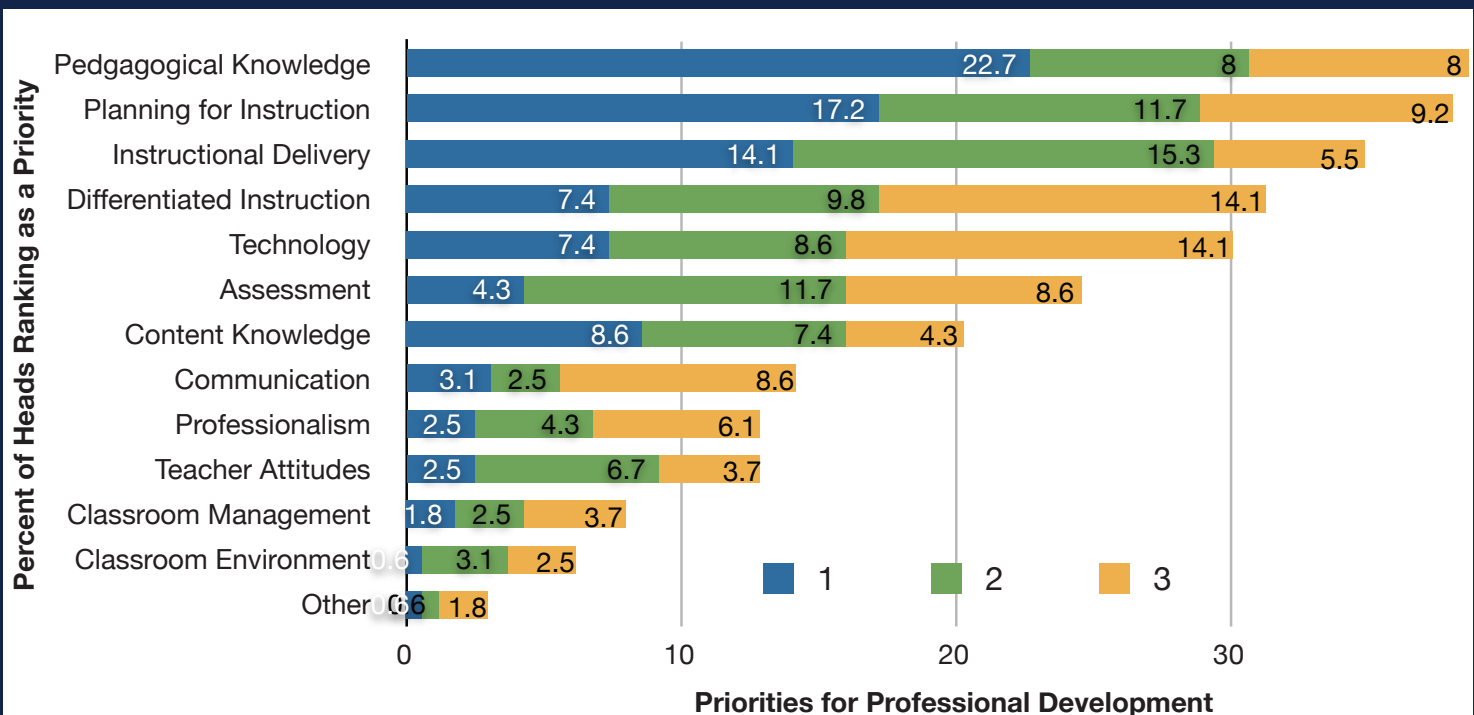
After gathering data from SAIS administrators regarding their beliefs about their teachers' strengths and weaknesses, their responses were compared with what they reported to be their priorities for professional development. Researchers were interested in whether these priorities aligned with what the needs for professional development would be assumed to be, based on what was reported as areas of weakness.

As previously reported, when SAIS administrators were asked how well their teachers per-

form in a range of areas, the lowest scores were reported for integrating technology in instruction ( $M = 2.68, SD = .83$ ). Researchers hypothesized that this area would be highly-ranked as a priority for professional development. However, only 30% of administrators chose integrating technology as one of their top 3 priorities for professional development. Of that 30%, slightly one-fourth ranked integrating technology as their top priority, which would suggest that Heads' priorities are not in alignment with reported needs. On the other hand, teachers received the highest scores from SAIS Heads of school for how well they create an environment of respect and rapport in the classroom ( $M = 3.67, SD = .51$ ), and only 8% of the administrators reported that this was also a priority for professional development.

Another area in which SAIS Heads gave lower scores to teachers was in how well they dif-

**Figure 14:  
Comparison of Heads' Top 3 Priorities for Professional Development**



differentiate instruction to meet a variety of student abilities and needs ( $M = 2.75$ ,  $SD = .81$ ). Here, 35%, or just over one-third of the Heads reported this area as one of their top-three priorities for professional development. Of those that viewed differentiating instruction as a priority, 84% ranked it as one of their top two. Similarly, SAIS Heads gave lower scores to their teachers for how well they design instruction that meets a variety of student learning styles ( $M = 2.87$ ,  $SD = .723$ ). Yet, only 37% viewed this area as a priority for professional development. Of those that did, 77% ranked it as one of their top two priorities. Based on this data, it does not appear that Heads are appropriately aligning professional development priorities with teachers' needs.

Analysis of the data from surveys of SAIS Heads provides an abundance of information that can support decision-making related to teacher hiring practices and professional development for teachers in SAIS member schools. Several of these findings are developed further in the following section.

### **Professional Development to Support Effective Teaching**

Professional development for teachers is widely recognized and agreed upon as essential for continual improvement of teaching and learning. Based on our findings, SAIS administrators are providing professional development in several areas understood to be critical for effective teaching: content knowledge, knowledge of assessment, pedagogical knowledge, instructional delivery, and planning for instruction. These were areas in which at least half of the respondents reported offering professional development, indicating that professional development is most often tied to instructional concerns.

Also relevant is the fact that SAIS Heads' priorities for professional development are closely

tied to instructional concerns. Development of content knowledge, planning for instruction, and instructional delivery were most often reported as a priority for professional development. Surprisingly, development of content knowledge was revealed as a priority for professional development even though Heads reported that teachers demonstrated their content knowledge very well. Although on one hand it would appear then, that Heads' priorities for professional development are not aligned with their true professional development needs, there is also reason to believe that Heads intend to provide as much professional development in subject matter knowledge as they can. A concern of the researchers, then, is whether resources are being utilized in the most efficient manner, particularly if Heads, based on their hiring practices, are bringing in individuals who are already subject matter experts and should be receiving support in other areas.

Taking a closer look at how professional development is provided in SAIS schools, the data reveals that professional development is most often planned by administrators or other support staff. Increasingly, the research on professional development for teachers points to a need for teachers to have a role in the selection and planning of their professional development activities. Although professional development is often planned for administrators and teachers to participate together, the fact that teachers do not play as significant a role as administrators in the planning of the activities may affect buy-in and the overall effectiveness of the training.

Currently, it does not appear that SAIS Heads are frequently evaluating their professional development activities either for evidence of improvement in teacher practice or improvement in student achievement. While the literature indicates the need for evaluation of

## KEY FINDINGS

the effects of professional development, it is arguably a relatively “new” practice, gaining attention more recently as accountability has become a focal point in K-12 education. Interestingly, however, it appears that SAIS Heads with the most teaching experience (20+ years) are more likely than others to evaluate the effects of their professional development activities. Although there is no specific literature with which this finding can be connected, there is evidence to suggest that years of teaching experience provides these administrators with particular insight into best practices for effective professional development.

Other interesting findings related to disparities in the nature of professional development activities based on school size and SAIS Heads’ degree levels. The data revealed that the largest schools in the sample are much more likely to have professional development planned by teachers than the smallest schools in the sample. The researchers propose that this disparity most likely points to the likelihood that larger schools have more teachers, and can therefore draw upon a larger pool of knowledgeable and skilled individuals within the building to utilize as resources. This is a luxury that smaller schools may not have.

A second disparity was noted in the degree levels of SAIS Heads and the frequency with which professional development activities were planned by teachers. The Heads with higher degree levels were more likely to allow teachers to plan professional development. This finding could be explained by the fact that Heads with higher degree levels have a greater sense of distributive leadership, and more frequently delegate responsibilities across the organization.

Ultimately, the data gathered from SAIS Heads related to their professional development practices indicates a focus on instructional concerns. The literature on effective teaching indicates the need for teachers to be knowledgeable in subject matter and pedagogical content knowledge, in addition to areas such as assessment and differentiated instruction. It is important however, for Heads to assess their teachers’ professional development needs and include others in the decision-making process, in order to ensure the most effective use of both human and financial resources.

### Factors Contributing to Effective Teaching

#### *Hiring*

While the literature provides conflicting viewpoints on the importance of degree type and level, the responding Heads of School indicate strongly that this is important in SAIS schools. The preference clearly lies with candidates who have undergraduate degrees in content areas combined with graduate degrees in either content areas or education. On the other end of the spectrum, SAIS Heads of School rank applicants with only undergraduate degrees as the lowest preference for hiring, especially those with degrees in education. Despite their hiring preferences, SAIS Heads of School report that they frequently hire applicants with only undergraduate degrees. The majority of the available new teaching candidates would be those just graduating with undergraduate degrees. Given that the majority of the current teaching force has a Bachelors degree it appears that there is a discrepancy between who is available and who is preferred for hiring.

When asked to rank hiring preferences based on degree combinations, over 10% of the respondents commented that that hiring preferences depend upon which division of the organization has the need. All of these comments came from Heads of School at institutions that had a combination of elementary and secondary divisions. The results of the survey supported these comments in that applications with undergraduate degrees in education were preferred at schools with Lower School divisions when compared to those with Middle and Upper divisions only. Although respondents indicated a preference for degrees in content areas, respondents in the Upper School only institutions also prefer the undergraduate education applicants when compared to Middle and Upper divisions. This is an unexpected result as one would expect for

Upper School only institutions to rank undergraduate education degrees at a lower level than institutions with multiple levels. There are no significantly related school characteristics that give reason for this result.

#### *Certification*

By nature of their independence from government regulations, SAIS schools are not required to hire certified teachers. When asked about the importance of certification the expectation was that the responses would tend toward low levels of importance. However, the responses are unexpectedly evenly distributed relating to both current certification and having been certified at some point. The range from not important to very important for current certification is 33% to 22% and 29% to 17% for having held certification at some point. Low levels of importance certainly prevail yet many Heads of School see certification as an important consideration for hiring.

Though school location (rural, suburban, and urban) is not a categorization used by SAIS, research has shown that rural schools encounter unique obstacles in hiring and retention. The results of this survey show the self-reported school location to be significant in a number of areas, one of which is teacher certification. The expectation would be that rural schools might consider teacher certification less important because recruiting quality certified teachers to rural areas can be potentially challenging. However, the survey respondents from rural schools indicate that teacher certification is more important than those in suburban schools. A closer look at the characteristics of the rural schools reveals that all of the schools have an Upper School division. This suggests a possible connection between certification and high school credit classes, although our data does not support such a connection.



### Professional Practices

The literature on effective teaching provides a long list of professional practices from which survey questions were drawn. Respondents were asked to indicate the level of importance of practices in three different categories: Content and Pedagogical Knowledge, Classroom Environment, and Community, Communication, and Growth. The Heads of School were also asked to indicate the level of performance of their current teachers on the same practices. The researchers expected that the Heads of School would say that most of the practices are either important or very important and the results followed that expectation. Unexpectedly, the Heads of School also generally indicated that the performance levels were high - very well or well. Given that the surveys were distributed through SAIS, the accrediting agency for the member schools, and responses are confidential but not anonymous, it is possible that this close alignment is a result of some level of social desirability. Schools are regularly identified in SAIS surveys by the Head of School's email address but this is the first request that might be perceived as evaluative of teacher performance.

Most of the professional practices were positively scored for both level of importance and performance; integrating technology in instruction is the exception. This practice is one of the least important according to Heads of School and is also the one for which teacher performance was indicated to be the lowest. Changes in technology are occurring more quickly than many teachers can keep pace. While much of the current teaching force grew up in technology-friendly times, today's students have lived their entire lives with cell phones and the internet, among other things. They function comfortably in the world of text messaging, blogs, and other interactive technologies. A focus on integrating technology into the classroom is

part of meeting the needs of today's students and preparing them for tomorrow's challenges.

School size and school location appear to be linked to this lack of technological integration as well. This is particularly true with the smaller schools in the population, those with fewer than 300 students, when compared to the largest SAIS schools as well as with schools located in rural areas when compared to those in urban areas. This lack of technological integration does not appear to be linked to the age of students nor is there a connection between school size and school location. This leaves one to think that importance placed on technological integration by the Heads of School could be an influencing factor in this situation. Perhaps the resources for technology in the smaller schools and those located in rural areas are not available. Another possibility is that Heads of School are giving priority to other budget items because, as indicated in the survey, integrating technology in the classroom is not among the most important professional practices.

Heads of School generally feel that their current teachers work well together but they don't report working well with colleagues as being particularly important. This is especially true for respondents from Upper Schools only when compared to those with all three divisions as they see this practice as being significantly less important. In this age of collaboration, this result is unexpected but potentially explainable because of the reputation of content-focused Upper School teachers. As students move from Lower to Middle to Upper school the focus of their classes become much more subject specific and only a few teachers are qualified to teach each subject. The teacher collegiality found in lower grades may drop off as a result of the content focus. This is a reality in many institutions but may not be the most effective way for teachers to work. Teachers working in

isolation are not taking advantage of the resources, human or otherwise, available to improved professional practices.

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Also relevant is the fact that SAIS Heads' priorities for professional development are closely tied to instructional concerns. Development of content knowledge, planning for instruction, and instructional delivery were most often reported as a priority for professional development. Surprisingly, development of content knowledge was revealed as a priority for professional development even though Heads reported that teachers demonstrated their content knowledge very well. Although on one hand it would appear then, that Heads' priorities for professional development are not aligned with their true professional development needs, there is also reason to believe that Heads intend to provide as much professional development in subject matter knowledge as they can. A concern of the researchers, then, is whether resources are being utilized in the most efficient manner, particularly if Heads, based on their hiring practices, are bringing in individuals who

are already subject matter experts and should be receiving support in other areas.

Taking a closer look at how professional development is provided in SAIS schools, the data reveal that professional development is most often planned by administrators or other support staff. Increasingly, the research on professional development for teachers points to a need for teachers to have a role in the selection and planning of their professional development activities. Although professional development is often planned for administrators and teachers to participate together, the fact that teachers do not generally play a significant role in the planning of the activities may affect buy-in and the overall effectiveness of the training.

Currently, it does not appear that SAIS Heads are frequently evaluating their professional development activities either for evidence of improvement in teacher practice or improvement in student achievement. While the literature indicates the need for evaluation of the effects of professional development, it is arguably a relatively "new" practice, gaining attention more recently as accountability has become a focal point in K-12 education. Interestingly, however, it appears that SAIS Heads with the most teaching experience (20+ years) are more likely than others to evaluate the effects of their professional development activities. Although there is no specific literature with which this finding can be connected, there is evidence to suggest that years of teaching experience provides these administrators with particular insight into best practices for effective professional development.

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the largest schools in the sample are much more likely to have professional development planned by teachers than the smallest schools in the sample. The researchers propose that this disparity most likely points to the likelihood that larger schools have more teachers, and can therefore draw upon a larger pool of knowledgeable and skilled individuals within the building to utilize as resources. This is a luxury that smaller schools may not have.

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greater sense of distributive leadership, and more frequently delegate responsibilities across the organization.

Ultimately, the data gathered from SAIS Heads related to their professional development practices indicates a focus on instructional concerns. The literature on effective teaching indicates the need for teachers to be knowledgeable in subject matter and pedagogical content knowledge, in addition to areas such as assessment and differentiated instruction. It is important however, for Heads to assess their teachers' professional development needs and include others in the decision-making process, in order to ensure the most effective use of both human and financial resources.

### *General*

As mentioned previously, respondents categorized their location as rural, suburban, or urban. SAIS does not categorize its schools using these terms, so we were unable to match the reported data to the entire population of SAIS member schools. However, several significant findings were related to school location, leading us to our first recommendation: SAIS should begin categorizing and tracking schools based on location - rural, suburban, and urban - in order to have the ability to evaluate the needs of schools based on setting and provide differentiated services when needed or appropriate. In addition, SAIS should use existing school size and type categories to evaluate the needs of schools based on characteristics and provide differentiated services when needed or appropriate.

### *Hiring*

Although respondents in this study indicated a preference for content area degrees over degrees in education, they also indicated that they often hire teachers with degrees in education. Our second recommendation is for SAIS to provide guidance and support to Heads with regard to hiring and recruiting teachers that match their hiring preferences. One way SAIS could help with this is to assist member schools in developing marketing materials to attract quality teachers to independent schools. Messaging could focus on the benefits of teaching in independent schools, and schools should be encouraged to find ways to offer competitive, comprehensive benefits packages for teachers.

To address the Heads' stated preference for teachers with subject area degrees, we recommend that SAIS explore partnerships with universities with the goal of creating opportunities to identify and attract teachers with strong content knowledge. In addition, a partnership with a university could allow for the creation of specialized subject area professional development and graduate degree programs, which could be used by SAIS member schools to strengthen the subject area knowledge of its teachers.

### *Professional Practices*

We recommend that SAIS encourage its member schools to stay current on educational research, particularly related to effective teaching. We recommend that SAIS provide the comprehensive literature review to Heads and member schools. We also recommend that SAIS develop workshops and training materials for schools to use with teachers that emphasize research-based effective teaching practices and the integration of technology to enhance instruction.

### *Professional Development*

Participants in this study clearly value content knowledge for their teachers. We recommend that SAIS communicate the literature on the value of both content and pedagogical content knowledge to its member schools. Because SAIS member schools prefer to hire teachers who have strong subject matter knowledge and degrees, we recommend that SAIS design and offer professional development opportunities to support pedagogical content knowledge and instructional methods for teachers in its member schools. Professional development for SAIS Heads could also prove valuable, particularly regarding the characteristics of effective professional development. Heads indicated their influence and involvement in decision-making for professional development, but also revealed that they seldom evaluate professional development activities for their effect on student learning. We recommend that SAIS provide training for Heads regarding the value of involving teachers in professional development decision-making and on methods for linking professional development to student learning and evaluating its effectiveness.

## IMPLICATIONS FOR FURTHER RESEARCH

Because of the conflicting research regarding teacher preparation programs and credentials, we encourage SAIS to pursue a follow up study designed to determine the academic background and credentials of the most effective teachers in SAIS member schools as determined by Heads and division directors. This study could also explore the verbal abilities, college entrance exam scores, and the selectivity of undergraduate institutions of those teachers. Although this might not be generalizable to schools outside of SAIS, we believe it will provide valuable information related to hiring for SAIS and its member schools.

Regarding professional development, we encourage SAIS to pursue a study of the process through which member schools evaluate the effectiveness of the professional development they provide. Because professional development is one of SAIS' main services to member schools, it is important that both SAIS and member schools are aware of the characteristics of effective professional development and have the ability to evaluate quality professional development programs.

Finally, any research in independent education is limited in its generalizability because of the nature of independent schools - schools have their own missions and priorities. Nonetheless, because of the small research base in independent education, we encourage SAIS and others to continue to explore independent schools as a field of research. Once a base of knowledge has been developed, opportunities and data for comparative analysis that can inform and improve practices will emerge.

This exploratory study provides SAIS with data and findings regarding aspects of effective teaching in its member schools. Because of the lack of research in independent education, this study provides SAIS with new data that are not currently available that can be used to inform the services they currently provide to member schools. The aspects of effective teaching explored in this study include the factors that are important to SAIS Heads of School when hiring teachers and the extent to which their current faculty demonstrate those factors. In addition, the nature of and priorities for professional development in SAIS member schools were a project focus.

The mission of SAIS is to provide leadership, accreditation services, and professional development resources that will strengthen member schools as they fulfill their missions, a challenging mission when one considers the nature of independent schools and the variety of missions represented. However, it does appear that SAIS member schools have some common practices and preferences with regard to developing and delivering effective teaching.

Despite the fact that independent schools are free to develop their own policies and practices regarding effective teaching, SAIS Heads have indicated a proclivity toward practices and preferences that are supported by research on effective teaching. Although the majority of research on effective teaching is based on research in the public sector, independent schools can benefit from staying current on research and evaluating to what extent it is applicable in their schools. This creates a market for SAIS to provide information, professional development, and other services supported by research.

#### Introduction

In November 2006, the National Association of Independent Schools (NAIS) surveyed 1,000 adults in the United States to gather information about the public's attitudes and beliefs regarding independent schools (NAIS, 2007). Asked to rank a set of 20 characteristics of a quality education, more than 80% of respondents rated "Employing high-quality teachers" as one of their top choices. Not surprisingly, these results mirrored those of a similar study conducted in 1999 (NAIS, 2007). In addition, when asked to compare who does a better job of employing high quality teachers, close to half of the respondents chose independent schools over public schools. The 2006 NAIS survey also revealed the public's *increased* confidence in the ability of independent schools to prepare students academically for college.

By definition, "Independent schools are owned and governed by entities that are independent of any government or organization...They are typically governed by independent boards of trustees" (NCES, 2002). As such, schools operating independent of state governing bodies are free to develop their own policies and practices regarding teacher employment. Whereas public schools must abide by state regulations that dictate specific education qualifications and license requirements for employment eligibility, independent schools set their own standards, which often do not require completion of a state certification program.

With such high public opinion of independent schools, one might expect a wealth of research to support the persisting belief in the abilities of independent schools and their teachers. However, the opposite is true. Very little, if any, research exists on the effectiveness of teachers in independent schools. In considering the available literature on teacher effectiveness, the challenge then, is to apply what has been learned generally to inform research that can contribute to an understanding of the unique needs of teachers in independent schools.

#### Effective Teaching: A Review of the Literature

##### Frameworks for Effective Teaching

The components of effective teaching have been of interest to researchers and educators, and different researchers have developed frameworks regarding effective teaching. Anne Reynolds (1992) constructed a framework of teaching tasks including pre-active, interactive, and post-active tasks. Mortimore (1994) created categories of effective teaching skills comprising organizational, analytical, synthesizing, presentational, assessing, managerial, and evaluative. According to Brophy and Good (1986), the practices of effective teachers include careful lesson planning, articulation of learning goals to students, monitoring student work, and time on task. Charlotte Danielson (2002) created four domains of professional practice: planning and preparation, classroom environment, instruction, and professional responsibilities. James Stronge developed another effective teaching framework in 2002 consisting of six areas: prerequisites of effective teaching, the teacher as a person, the teacher as classroom manager and organizer, organizing for instruction, implementing instruction, and monitoring student progress. Not surprisingly, despite their superficial differences, frameworks of effective teaching share many common characteristics and draw from the same body of research and literature. For the purposes of this literature review, the research on effective teaching will be organized as follows:

- Factors contributing to effective teaching
- Professional practices of effective teachers
- Professional development to support effective teaching
- Personal characteristics of effective teachers



### Factors Contributing to Effective Teaching

Questions regarding teacher effectiveness have circulated for decades, and a plethora of literature on the subject currently exists. Only recently, however, have those questions become more specific, with special attention being given to teacher background, subject area, and teaching context. To inform this study, researchers reviewed literature related to the following factors understood to contribute to effective teaching: teacher content knowledge, pedagogical training, teacher certification, and teacher experience. The range of perspectives on each, detailed in this review, underscore the need for more conclusive data on how these factors interact to contribute to effective teaching. Yet, as Goldhaber and Anthony (2003) write, “Although studies have produced contradictory findings about which attributes of teachers are most likely to translate into effective classroom performance, some information on how specific teacher attributes correlate with teacher quality is available, and it can help guide administrators’ hiring decisions.” Thus, the goal here is to fully examine what is known about these factors and make sense of the disparity to support decision-making in hiring and assessing professional development needs.

#### *Content Knowledge*

To begin, any discussion of the importance of teacher content knowledge must be prefaced with an agreement on what constitutes “adequate” or “appropriate” content knowledge, as well as how it is measured. Goldhaber and Anthony (2003) explain that “Because content knowledge is also not clearly defined or measurable in all content areas, studies often rely on an individual’s undergraduate coursework as proxies for content preparation. Coursework, however, varies across institutions as does an individual’s mastery of content.” Although Goldhaber and Anthony note an impor-

tant consideration for research of this nature, Bransford, Brown, and Cocking (2000) have developed a framework for characterizing subject matter competence. According to the authors, one is competent in a subject when he/she possesses “(a) a deep foundation of factual knowledge, (b) understanding of the facts and ideas in the context of a conceptual framework, and (c) organization of the knowledge in ways that facilitate retrieval and application” (cited in Kahan, Cooper, & Bethea, 2003).

In the various studies on the relationship between degrees, coursework, and effective teaching, the data yields mixed results across, as well as within, content areas. A study conducted by Rowan, Correnti, and Miller (2002) found no relationship between reading teachers’ degree status and student achievement. Similarly, an analysis by Goldhaber and Brewer (1997) found no differences in student achievement when they examined whether 10th grade students scored better when their teachers had master’s degrees. Researchers examining the relationship between science teachers’ backgrounds and student achievement have produced conflicting results. A study by Chaney (1995) revealed that student achievement in science was higher for those whose teacher had completed graduate-level coursework in science, while a study conducted in 2000 by Goldhaber and Brewer found no impact of teachers having subject-specific degrees in science.

While studies of the relationship between content knowledge and student achievement have been inconclusive in most subjects, the results of studies in math have been much more provocative. A 1994 study conducted by Monk and King found positive relationships between students’ math gains and teachers’ math coursework, leading to the conclusion that students learned more math when their teachers had taken more math courses. They cautioned however, that the impact of subject-specific training is dependent upon the context in

which the classes are taught. While the number of math courses teachers had taken impacted student achievement, additional coursework beyond the college-level was significant only for teachers of advanced courses (cited in Goldhaber and Anthony, 2003).

In a separate analysis focused on math teachers, Goldhaber and Brewer's (1997) data indicated that students whose math teachers had a master's degree in math had higher achievement gains than those students whose teachers had no advanced degree or an advanced degree in a non-math subject. The same results were produced when the comparison was made between bachelor's degrees in math vs. non-math bachelor's degrees. Another study conducted years later had the same results, and Goldhaber and Brewer (2000) found once again that math students who have teachers with bachelors or masters degrees in math have higher test scores relative to those whose teachers have out-of-subject degrees. It is important to reiterate, too, in understanding these conclusions that the authors' use of degrees and coursework as proxies to determine the effect of content knowledge is not without flaws, considering the variation in coursework across settings.

Ultimately, it is difficult to draw any certain conclusions regarding the relationship between content knowledge and teacher effectiveness. "The research suggests that grade level and the specific content in question are important variables in understanding this relationship" (Wilson & Floden, 2003). Analysis of the impact of content knowledge, then, must be done within the context of specific subjects and grade levels in order to serve as useful indicators of teacher effectiveness.

While few would argue that content knowledge is of little importance, only vague generalizations can be made to describe the nature of the relationship. As Goldhaber and Anthony (2000) write, "It can be concluded that teachers with advanced degrees in specific subjects can have

an impact on student learning in those subjects in certain settings." Moreover, "The research suggests that grade level and the specific content in question are important variables in understanding this relationship" (Wilson & Floden, 2003). Any conclusions regarding the importance of content knowledge must take note of these complex interactions. Certainly, while the studies in math provide "moderate support for the importance of subject-matter knowledge" (Allen, 2003) there is still "no level of specificity regarding which courses may have an impact on the ability to teach" (Allen, 2003). It is also important to stress that even in instances where researchers found a significant relationship between teacher coursework and student achievement, they indicated a point at which additional classes did not help, and in some cases, had a negative impact on student achievement. In short, a definitive response to how content knowledge contributes to teacher effectiveness remains elusive.

### *Pedagogical Content Knowledge*

The fact that teachers should know the subject matter they teach will elicit no debate. As mentioned, some researchers have examined data related to teachers' subject matter knowledge and found a relationship between teachers' subject matter preparation and student achievement (Darling-Hammond, 2000; Goldhaber and Brewer, 2000; Monk, 1994). However, some of the findings seem to be in conflict. For example, a study by Goldhaber and Brewer (2000) found that while a major in the subject area taught was a strong predictor of student achievement in math, this was not the case in science. In another study by Monk (1994), a positive relationship was found between the number of undergraduate math courses a teacher had taken and student achievement. Interestingly, however, a point of diminishing returns was established after about five courses (Monk, 1994). Because of this, researchers have concluded that there is more to effective teaching than just content knowledge.

Teachers need to possess particular understandings in order to be effective - understandings of subject matter, skills, abilities, and knowledge directly related to teaching. While specific subject matter knowledge is important, teaching and learning requires understanding of pedagogy - methods and strategies for teaching - specific to the content being taught. Researchers have referred to this critical component of effective teaching in a variety of ways:

- Content-specific pedagogy (Marks, 1990; Shulman & Sykes, 1986)
- Pedagogical content knowledge (Marks, 1990; Grossman, 1988; Shulman, 1987)
- Subject-specific pedagogical knowledge (McDiarmid, Ball, & Anderson, 1989)
- Content-specific cognitional knowledge (Peterson, 1988)
- Subject matter specific pedagogical knowledge (Tamir, 1988)

While research has shown that teachers should possess deep knowledge of the subjects they teach (Shulman, 1987; Wilson, Floden, & Ferrini-Mundy, 2001), researchers are shifting their focus to the pedagogical understandings of subject matter, also referred to as pedagogical content knowledge. Pedagogical content knowledge was first defined as follows:

*...ways of representing and formulating subject matter that make it comprehensible to others. Pedagogical content knowledge includes an understanding of what makes the learning of a specific topic easy or difficult; the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons (Shulman, 1986)*

Effective teachers are experts in their field, both in content and pedagogy. Bransford, Brown, & Cocking (1999) evaluated the differences between novices and experts and the knowledge that each possess. According to

their research, expert knowledge is organized around important concepts, big ideas, and not isolated facts. Effective teachers have expert knowledge - deep knowledge of their content area and pedagogical content knowledge - the knowledge, skills, methods, and strategies necessary to teach the content to others.

In short, pedagogical content knowledge is the knowledge of content for teaching - what it means to understand one's subject matter for the purpose of teaching it to others (Grossman, Schoenfeld, & Lee, 2005). It requires "the ability to anticipate and respond to typical student patterns of understanding and misunderstanding within a content area, and the ability to create multiple examples and representations of challenging topics that make the content accessible to a wide range of learners" (Grossman, Schoenfeld, & Lee, 2005). Many agree that pedagogical content knowledge is a critical component of effective teaching.

### *Teacher Preparation and Certification*

Another approach to understanding effective teaching relies on the analysis of teacher educational backgrounds and preparation for the classroom. Conclusions regarding the utility of this approach, however, span a spectrum of opposed views. At one extreme, it is believed that teacher effectiveness is related to education credentials and preparation received from a standard, certifying college or university. At the other end of the spectrum are those who argue for the dismantling of certification programs and requirements, attributing teacher effectiveness to academic preparation and other factors unrelated to training. In the case of independent schools, the explanation likely falls somewhere in-between, as teachers in such schools enter the profession with a highly diverse set of backgrounds, experiences, and training. Teacher educational backgrounds and preparation relate not only to degree types and levels, but also route to teaching, and whether it was traditional, through a state-approved

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certification program or through alternative means.

While there is a dearth of research on teachers in secondary independent schools, the literature on Teach for America participants helps to shed light on the teacher certification and preparation debate. Entering the classroom via non-traditional, alternative means, an examination of the success (or arguable lack thereof) of Teach for America participants is helpful for independent school administrators seeking indicators of teacher effectiveness. In one study conducted by researchers Xu, Hannaway, and Taylor (2007), longitudinal data was used to analyze the effect of Teach for America participants on math and science achievement in North Carolina high schools. Linking student-level end-of-course test data with teacher data, Xu, Hannaway, and Taylor had astonishing results. When the researchers compared student exam performance between the traditional certified teachers and Teach for America teachers, the Teach for America teachers were more effective. Furthermore, the findings “suggest that the TFA effect, at least in the grades and subjects investigated, exceeds the impact of additional years of experience, implying that TFA teachers are more effective than experienced secondary school teachers” (Xu et al., 2007). Although the data revealed support for this conclusion across all subject areas, results in math were particularly strong, substantiating results of other studies of the effectiveness of Teach for America teachers (Decker, Mayer and Glazer, 2004; Kane, Rockoff and Staiger, 2006).

Such findings support a conclusion that teacher certification has little impact on teacher effectiveness, and it is perhaps differences in academic preparation and pedagogical training that explain differences in effectiveness (Xu et al., 2007). Further support stems from analysis of descriptive statistics of Teach for America teachers, which reveals differences in academic preparation between TFA teachers and non-TFA teachers. In addition, other studies have found

that the variation in effect across categories of certification is much smaller than the variation in effect found within groups of teachers with similar certification levels (Decker et al., 2004; Kane et al., 2006). By providing evidence that certification status is not necessarily associated with teacher effectiveness, researchers have in some ways validated independent school hiring practices that do not require teachers to have state-issued certification.

Wayne and Youngs (2003), in their review of several studies of the relationship between student achievement and teacher characteristics, caution the use of individual studies to demonstrate that a particular indicator does not matter. They argue that overall, studies of teacher degree and coursework as indicators of effectiveness have yielded mixed results. The exception, however, is in the area of math, where several studies have found that teachers with advanced degrees in math and/or math teaching are more effective than teachers without math certification or with a degree in an area other than math (Wayne and Youngs, 2003; Goldhaber and Brewer, 2000).

Contrasting such studies that have downplayed the effect of teacher certification on student achievement, is the work of Linda Darling-Hammond and several others, whose research reveals a much different relationship between teacher preparation and student achievement. In a previous study of teacher certification and teacher effectiveness, Darling-Hammond, Holtzman, Gatlin, and Helig (2005) found that Houston teachers who had graduated from an approved teacher education program and obtained full certification “were more effective than other teachers in stimulating student achievement gains in both reading and mathematics on three different test batteries over a multi-year period.” Their findings held true even for teachers recruited through Teach for America. In fact researchers found no instance in which uncertified Teach for America teachers performed as well as certified teachers with the



same level of experience. Additionally, Darling-Hammond et al (2005) found, “relative to teachers with certification, uncertified teachers and those in similar categories had generally negative effects on student achievement, after controlling for student characteristics, prior achievement, teacher experience, and degrees.” Thus, the researchers concluded, teachers who completed training that lead to certification were more effective than those who had not (Darling-Hammond et al., 2005).

Goldhaber and Brewer’s (2000) previously-mentioned study also compared achievement levels of high school students taught by teachers with different types of licensure and found that students taught by fully-licensed teachers tended to have higher levels of performance, on average, in math and science. They went on, however, to note a problem with considering the impact of teacher certification. They argue that because some teacher education courses focus on content specific teaching methods, and others actually teach subject-specific teaching methods, assessing the impact of teacher certification can be difficult. Other research points out that the impact of teacher training is not always clear because the quality and content of teacher training programs varies so greatly (Wilson, Floden & Ferrini-Mundy, 2001).

When the attention is turned to independent schools, the conflicting research actually provides great insight. Although many independent schools do not *require* certification, there are teachers in independent schools who have completed requirements for state certification. No research, to our knowledge, has been conducted to evaluate differences in effectiveness between independent school teachers who have possess state certification and those who do not. In the absence of available research to support or refute the claim, it would be neither possible, nor prudent, to link the effectiveness of teachers in independent schools

to traditional views of preparation and certification. As the work of Darling-Hammond et al. highlights the “limitations of teachers without preparation” (2005), other studies illustrate that the higher qualifications of a group of teachers can actually “offset the more substantial preparation received by teachers following a more traditional route” to teaching (Boyd, Goldhaber, Lankford & Wyckoff, 2007). Taken together, the conclusions provide support for a claim that *either* a strong academic background *or* adequate preparation and training contribute to teacher effectiveness, which is precisely what one would find in an independent school: teachers who are either state-certified or have received substantial teacher training, teachers that have solid academic preparation, or a combination of both.

To address certification more specifically, researchers have more recently begun examining the relationship between pedagogical knowledge and effective teaching. In Allen’s (2003) review of the research on teacher effectiveness, he finds that there is “limited support” for the conclusion that preparation in pedagogy can contribute significantly to effective teaching. He also points out that it is “less clear” how such knowledge and skills are best acquired. Wilson and Floden (2003), however, found that there does appear to be consensus on which skills new teachers should possess. In their analysis of studies of the impact of pedagogical knowledge, they cited the work of Reynolds, Tannenbaum, and Rosenfeld (1992) and Rosenfeld and Tannenbaum (1991). In two separate studies, the researchers asked expert educators to rank the areas of knowledge needed most for effective teaching. “The educators weighted management of the learning process highest, followed by human development and the learning process, curriculum planning and design, assessment and the learning process, and professional issues related to teaching and learning” (cited in Wilson and Floden, 2003).

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A review of the literature on the value of pedagogical preparation actually uncovers more problems of research design than conclusive data. Goldhaber and Anthony (2003) argue, “Few studies directly link how the type of education courses taken by teachers affects student achievement. Discussions about pedagogical preparation focus instead on secondary measures like the relationship between student achievement and teachers’ scores on standardized tests measuring pedagogical knowledge, and the relationship between student achievement and teacher certification status, considered an indication that the teacher completed some kind of pedagogical training.” Additionally, Wilson and Floden (2003) summarized what they believe to be reasons for the inconclusive nature of this research: there is little agreement of what constitutes a measure of teacher preparation, there are numerous variables that could be used as proxies, and even if proxies are agreed upon, there would still be an issue of determining measures for the outcomes. Essentially, without studies that link specific pedagogical coursework to teacher effectiveness, it is difficult to draw conclusions about the impact of pedagogical knowledge. Nonetheless, many researchers point to the importance of pedagogical knowledge.

### *Academic Proficiency and Experience*

Two final factors understood to contribute to teacher effectiveness are teachers’ academic proficiency and years of experience. Surprisingly, academic proficiency is the factor studied the least but with the most promising data. Strauss and Vogt (2001) point out, “The research predicting student achievement that includes measures of teacher academic proficiency is not plentiful, but it consistently shows a positive relationship between the two.” Various other studies have found that teachers who attended more selective colleges are more effective (cited in Goldhaber and Anthony, 2003). In fact, this was also a conclusion drawn from the Xu et al.’s Teach for America study. They believe that

Teach for America teachers were able to “more than offset their lack of teaching experience, either due to their better academic preparation in particular subject areas or due to other unmeasured factors such as motivation” (Xu et al., 2007).

While such studies have used performance on tests of verbal ability, teacher licensure, college entrance exams and selectivity of undergraduate institutions to examine the impact of academic preparation on teacher effectiveness, the use of these varied measures of intelligence and motivation creates issues of measurement, selection, and causality. Despite the issues posed, the fact that the data here is more consistent in these studies than in studies examining other factors related to teacher effectiveness, measures of academic proficiency are perhaps the best indicators of teacher quality (Goldhaber and Anthony, 2003). Clearly, a proposal for research on teacher effectiveness in independent schools must examine teacher backgrounds, to include measures of verbal ability and selectivity of undergraduate institutions.

Finally, several studies indicate that it is the first few years of experience in the classroom that better predict teacher effectiveness (Xu et al., 2007; Kane et al., 2006). The findings on the effect of teacher experience span a range similar to that of the other factors included in this review. A study conducted much earlier, however, suggests that there is little connection between teacher experience and teacher effectiveness. In Hanushek’s (1986) review of 109 studies, less than half revealed a positive relationship between teacher experience and student achievement. Moreover, 7 of those studies found a negative relationship between teacher experience and student achievement.

In the Kane et al study (2006) data revealed that teacher effectiveness improves during the first few years of experience for both math and reading. That conclusion supports Murnane’s (1995) finding that a teacher’s learning curve



peaks in the first few years, approximately two for reading and three for math (cited in Goldhaber and Anthony, 2003). Floden and Wilson (2003) summarize, “Although the results are inconsistent, there appears to be a trend in the research on teacher experience and teacher effectiveness. Teachers with more experience appear to be more effective, with the important caveat that there may be a ceiling effect after 2 to 5 years of experience.”

Considering the additional layer of ambiguity offered by this final factor, independent schools are faced with a sizeable challenge as they strive to understand how content knowledge, pedagogical knowledge, certification, academic preparation, and teacher experience impact the effectiveness of their teachers. As no study is without its limitations, taken together, the research on effective teaching is replete with inherent flaws that limit the generalizability of even the most well-designed studies.

### **Professional Practices of Effective Teachers**

Beyond the factors that contribute to effective teaching, researchers have examined the professional practices of effective teachers - what effective teachers do in their classrooms. The following section reviews the literature on key professional practices including classroom management and organization, planning and preparation, instruction, and monitoring student progress.

#### *Classroom Management and Organization*

For effective teaching and student learning to occur, classrooms must be organized, well managed, and conducive to learning. Effective teachers create focused and nurturing classrooms that result in increased student learning (Marzano et al., 2003). They also teach and practice rules and procedures with students and offer clear instructions to students (McLeod et al., 2003; Emmer et al., 1980).

They use a minimum number of rules to ensure safety and productive interaction in the classroom, and they rely on routines to maintain a smoothly running classroom (McLeod et al., 2003). Effective teachers focus their rules on expectations for how students should act toward one another, maintain a safe environment, and participate in learning (Marzano, et al., 2003; McLeod et al., 2003). But having the rules alone is not enough. Effective teachers offer clear explanations of the rules, model the rules, rehearse the expectations with students, and offer students opportunities to be successful in meeting the expectations (Covino & Iwanicki, 1996).

Establishing and maintaining rules and routines are important parts of creating and managing a learning environment, and they contribute to successful classroom management as well. These rules and routines are standardized ways to handle common classroom activities and simplify the complexities of the classroom for both teachers and students by making events more predictable (Brophy, 1987). Effective teachers have classrooms with routines to operate efficiently and effectively - procedures and ways of doing things that vary little during the course of the day or school year (McLeod et al., 2003). Examples include routines for entering and leaving the classroom, turning in assignments, participating in class activities, and transitioning between activities. Effective teachers use routines for daily tasks more than their ineffective counterparts (Stronge, Tucker, & Ward, 2003). By establishing and practicing routines for class procedures, effective teachers ensure that the focus of the classroom is on instruction (Covino & Iwanicki, 1996). Routines empower students to be responsible for their own behavior and learning in the classroom (Covino & Iwanicki, 1996), and when classroom management issues arise, teachers have procedures to address the concern in an efficient, fair, and consistent manner (Shellard & Protheroe, 2000; Thomas & Montgomery, 1998).

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With regard to managing student behavior, effective teachers ignore minor distractions and deal with potentially significant disruptions early by using eye contact, movement through the classroom, or questions or comments to the disruptive student (Taylor & Valentine, 1985). They talk with a misbehaving student in private to minimize power struggles and attempts to save face (Brophy, 1987). They question the student to determine her/his level of awareness about the behavior and make sure the student understands why the behavior is unacceptable in the classroom environment (Brophy, 1987). Effective teachers try to get students to take responsibility for their behavior and make a commitment to change. They model and instruct students in appropriate ways to behave in class and are willing to help students have appropriate behavior in class (Brophy, 1987). If persistent misbehavior occurs, effective teachers warn students, follow through with consequences, and as a last resort invoke punishments that maintain respect for students' rights and a positive relationship between student and teacher (Bielefeldt, 1988).

The concept of classroom management goes beyond problems of misbehavior and discipline; it extends to student engagement and the order and organization of classroom life (Doyle, 1987). Effective teachers are managers of classroom life - they establish and maintain effective learning environments rather than act merely as authority figures or disciplinarians (Brophy, 1987). Classrooms with effective teachers are characterized by positive qualities, including rapport, empathy, and personal interactions between teachers and students (Brophy & Good, 1986; Taylor & Valentine, 1985). Effective teachers strive to understand the students in their classes in order to create and sustain a learning community. They frequently provide students with cues to remind them of acceptable behavior, and effective teachers are skillful at organizing and maintaining a positive classroom environment (McLeod et al., 2003).

Effective teachers have higher expectations for how students are to conduct themselves in the classroom than less effective teachers (Stronge et al., 2003). They establish relationships with their students in which high levels of cooperation, purpose, and guidance are balanced, resulting in a mutual relationship (Marzano et al., 2003). Effective teachers teach expectations to students and reinforce desired behavior. They also hold students accountable for their performance (Kohn, 1996). Effective teachers create classrooms in which students are able to and want to learn. They develop rapport through personal interactions with students. They also find ways to establish and maintain rules and routines that are fair and appropriate to students.

### *Use of Physical Space*

Effective teachers organize their classrooms to positively affect the physical space and make it a more productive learning environment. How the classroom is organized influences students' behaviors. The arrangement of furniture, location of materials, and work areas are all part of physical space to be organized. Effective teachers decorate the room with student work, they arrange the furniture to promote positive interactions among students, and they have comfortable and conducive areas for students to work and learn (Kohn, 1996). They also arrange and store materials and furniture so students can access them without disturbing others and the teacher can move freely around the room to monitor student progress (McLeod, et al., 2003). Effective teachers actively prepare their classrooms for teaching and learning, including having physical resources ready and available to students and arranging the physical layout of the room to provide appropriate areas for individual and group instruction (Conoley, 1988; Ward, 1987).

### *Time on Task*

Effective teachers dedicate significant amounts

of time to instruction and learning (Anderson, 1986; Emans & Milburn, 1989). This is called academic time in the literature and there is little controversy over the finding that when students spend more time engaged in lessons, they learn more (Bennett, 1987; Brophy & Good, 1986). Effective teachers maximize the time students spend actively involved in meaningful academic activities and minimizing the time spent off-task.

Many of the research studies from the 1970s revealed a positive relationship between the effective management of academic time and higher student achievement. Stallings et al (1978) found that students who spent most of their time being instructed by teachers or working independently under teacher supervision made greater gains than those who spent more time in non-academic activities or who were expected to learn largely on their own. Soar & Soar (1979) established that students learned more in classrooms where teachers had clear structure and routines that resulted in increased time on task. A major research study by Powell (1980) found that the largest adjusted gains for students occurred in classes where teachers were well organized, maximized time devoted to instruction and spent most of their time actively instructing students.

A common complaint from teachers is a lack of time to accomplish what needs to be done in a given day. Time is a limited resource, and effective teachers know how to make the most of it. A primary difference between effective and less effective teachers is that effective teachers are more productive with their instructional time (Cruickshank & Haefele, 2001). One way effective teachers accomplish this is by investing time at the beginning of the year to establish routines, procedures, and expectations so that valuable time is not lost during transitions or disruptions. Effective teachers are also more skillful at conserving time. They have routines to facilitate transitions and use

questioning strategies to make better use of the limited time they have with students (Covino & Iwanicki, 1996).

### *Grouping of Students*

How a teacher groups for instruction affects opportunities for students to achieve and contributes to successful instruction. According to Webb (1985), small groups are an effective way to increase students' verbal interactions with others. Additionally, grouping can provide better use of instructional time through more efficient student management, such as increased contact time between teachers and students, allowing students more opportunities to participate and teachers more opportunities to assess student progress and tailor instruction to students' needs (Lloyd, Crowley, Kohler, & Strain, 1988; Polloway, Cronin, & Patton, 1986).

Ability grouping is beneficial for student achievement when students remain in heterogeneous classes most of the day. Students can be grouped by ability in instances in which reducing heterogeneity is particularly important, such as when teaching a specific skill (Slavin, 1987). In addition to ability grouping, effective teachers also group students by other factors, such as learning style and interest. Such groupings allow teachers to differentiate instruction and attend to students' needs based on factors other than ability (Tomlinson, 1999).

Effective teachers arrange the physical and social conditions of the class in ways that are conducive to learning and that fit the academic task. They establish routines and rule that create a positive and constructive learning environment, they focus on academic time on task, and group students appropriately to meet students' needs and enhance student achievement.

### *Planning and Preparation*

Effective teachers thoroughly plan and prepare for instruction. Plans are made based on the year, semester, unit, week, and day to ensure that concepts and skills are presented in a sequential and meaningful way with adequate time for teaching and learning (Burden & Byrd, 1994; Thompson, 2002). Effective teachers' plans for instruction are organized around important concepts and questions, reflect the interests and abilities of students, and oriented toward outcomes and assessments (Jackson & Davis, 2000). Effective teachers spend a great deal of time planning - deciding what and how they will teach. Planning improves instruction by focusing on the purpose of the lesson, reviewing the subject matter, materials, and resources prior to presenting it to students, and determining how to start, deliver, and assess the lesson (Airasian, 1994). Well-constructed lesson plans yield better quality academic time because behavioral concerns diminish when students are engaged and academic time is used wisely (Shellard & Protheroe, 2000).

Effective teachers recognize that students come to school at various stages of readiness and development, so they meet students where they are and provide instruction tailored to address those variations. Effective teachers understand that it is not appropriate to simply present material without considering where the students are in their development. Instructional objectives and supporting activities must be appropriate for the learner (Marzano, Pickering, & McTighe, 1993). Effective teachers plan instruction that meets student needs, is at a pace that enables students to learn, and allows for feedback to assess student understanding (Cruickshank & Haefele, 2001). Key components of effective planning include knowledge of the curriculum, proper selection of instructional materials and resources, and attention to both long- and short-term planning.

Effective teachers are aware of how content

and skills fit together. Long-range planning enables teachers to integrate their instruction with other areas and to develop interdisciplinary units. Unit planning provides teachers with the opportunity to consider specific content and skills that will be taught, how much time should be allocated to each objective, and how to assess student learning (Thompson, 2002). Effective teachers use all available data such as pre-assessments, knowledge of students, and formative assessments to inform planning and instruction (Thompson, 2002).

### *Materials and Resources*

Effective teachers skillfully use curriculum materials and resources that engage students' interests, are appropriate for students' abilities and needs, and directly support instructional goals (Osborn, Jones, Stein, 1985). Effective teachers' expert-level knowledge extends to materials and resources. They are adept at selecting and implementing instructional materials that enrich and clarify content (Porter & Brophy, 1988). This expert use includes tailoring curriculum materials to the students' needs, abilities, and interests (Schram, Feiman-Nemser, & Ball, 1989). Effective teachers continually add to their repertoire of knowledge about instructional materials and resources. They use their knowledge of instructional goals to guide their decision making on what resources they need to acquire or develop (Buttram & Waters, 1997).

### *Instruction*

Once planning and preparation have taken place, effective teachers are ready to teach. Effective instruction requires pedagogical content knowledge, and it is another area where effective teachers differentiate themselves from average teachers. Leinhardt & Green (1986) contend that teaching is a complex cognitive skill based on knowledge of the content to be taught and about how to construct and conduct a lesson. When constructing and conducting lessons, or



implementing instruction, effective teachers include three essential elements: knowledge, decision making, and action. Knowledge includes the teacher's knowledge about the subject, students, and instructional strategies. Decision making includes the thinking and decisions that occur before, during, and after a lesson concerning how best to achieve intended outcomes. Action consists of the overt behaviors of teachers during instruction (Kyriacou, 1991).

### *Teacher Expectations*

Effective teachers know their subject matter in a way that allows them to create lessons that help students relate new information to what they already know (Porter & Brophy, 1988). Students achieve more when concepts, facts, principles, and procedures are interrelated during the lesson (Smith, 1985; Van Patten, Chao, & Reigeluth, 1986). Such lessons engage students in activities that are suited to their current developmental and achievement levels, interests, and needs (Brophy & Good, 1986; Porter & Brophy, 1988). Effective teaching invites students to enter the learning process at their own level and then progress from there, and this requires setting appropriate expectations for students. Expectations that are too low or too high may induce students to disengage from learning (Druian & Butler, 1987). Expectations need to be established and articulated both for instruction and for social behavior - students should know what work they are accountable for, how to get help when they need it, and what to do when they are finished with their assignments (Brophy & Good, 1986). Effective teachers also set appropriate expectations for themselves - they believe they are effective and can positively affect student learning (Taylor & Valentine, 1985).

Effective teachers not only have high expectations for their students, they communicate those expectations in a positive way and dem-

onstrate confidence in the students' abilities to master new content and skills (Covino & Iwanicki, 1996; Peart & Campbell, 1999). Expectations must be realistic and reasonable for each student to accomplish during the time spent with the teacher (Brown, 2002). Teachers who take responsibility for student learning and set high expectations for all of their students are generally more successful (Corbett, Wilson, & Williams, 2002).

However, high expectations alone do not ensure student success. Effective teachers actively engage students and demonstrate their commitment to student achievement through their dedication to teaching (Mason et al., 1992). Higher achievement standards are common in an effective teacher's classroom, and the power of an effective teacher is in helping students master material they would not have been able to on their own. Students are empowered to take responsibility for their learning and teachers are committed to ensuring student success (Corvino & Iwanicki, 1996). Effective teachers establish a climate of high expectations and trust where students are challenged, supported, and provided with constructive feedback.

### *Connecting to Prior Knowledge*

Effective teachers create lessons that enable students to connect what they already know to new information being taught. They understand the importance of students constructing new knowledge on what they already know. Effective teachers have more explicit and better organized knowledge and tend to provide instruction that features conceptual connections, appropriate and varied representations, and active and meaningful discourse, both teacher to student and student to student (Stein, Baxter, & Leinhardt, 1990). Before effective teachers engage students with new subject matter, they assess the readiness level of students for the new material. This assessment extends beyond skills and knowledge and

includes determining students' preconceptions of the subject matter, because preconceptions may contain misconceptions (Anderson & Smith, 1987; Roth 1985). Effective teachers use information about students' readiness, skills, and preconceptions to adapt the level and pace of instruction to the levels and needs of the students.

### *Strategies for Instruction*

Ultimately, effective teaching is about increasing student learning and achievement, and many researchers have examined how effective teachers affect student achievement through instruction. Research by Doyle (1987), for example, identified practices of effective teachers in increasing student achievement. He found that effective teachers emphasize academic goals, expect students to be able to master the curriculum, carefully organize and sequence the curriculum, clearly explain and illustrate what students are to learn, frequently ask questions to monitor students' progress and check for understanding, provide students with ample opportunities for practice, give prompt feedback, and hold students accountable for quality work (Doyle, 1987). In a similar study of effective teachers, Brophy & Good (1986) found that effective teachers are clear about instructional goals, knowledgeable about their content and strategies for teaching it, communicate clear expectations for students, make expert use of teaching materials and resources, devote more time to instruction, are knowledgeable about their students and adapt their teaching to students' needs, monitor student progress and provide regular feedback, accept responsibility for student learning, and are thoughtful and reflective about their professional practice (Porter and Brophy, 1988). In addition, some researchers have identified very specific instructional practices that increase student achievement. Marzano, Pickering, & Pollock (2001) identified nine categories of research-based instructional strategies that improve student achievement: identifying similarities and differences, sum-

marizing and note taking, reinforcing effort and providing recognition, assigning homework, using nonlinguistic representations, fostering cooperative learning, setting objectives and providing feedback, generating and testing hypotheses and questions, and providing cues and advance organizers

### *Differentiated Instruction*

Effective teachers are skilled at differentiating instruction. Differentiation is making learning experiences engaging and meaningful for all types of learners through the modification of the learning environment, instructional strategies, assignments, materials, and assessments. Effective teachers understand that every class is filled with students with diverse learning styles, needs, strengths, interests, and abilities and they view their class as a group of individuals rather than a homogenous class (Tomlinson, 1999). Effective teachers skillfully address student needs and differentiate instruction and assignments better than less effective teachers (Stronge, Tucker, & Ward, 2003). Effective teachers understand students' individual strengths, weaknesses, and prior experiences, and they meet students where they are and move them forward with the appropriate level of challenge and support. They raise the achievement levels for all students by varying the complexity of instructional tasks. Remediation, skill-based instruction, and individualized instruction are commonly provided to students based on their individual needs (Shellard & Protheroe, 2000).

Differentiated instruction involves providing a variety of approaches and opportunities for learning. Effective teachers who differentiate instruction identify what is important in the subject matter, focus on the goals of student learning and success, build on students' strengths, and consider all components of learning (Tomlinson, 1999). Effective teachers differentiate instruction by giving students choices in learning activities, special projects, and assessments. Responding to students' needs through differ-



entiation does not mean that all instruction is differentiated, but it does mean that effective teachers challenge their students appropriately by using a combination of approaches that mix a variety of methods and approaches (Tomlinson, 1999). Effective teachers are aware of learners' preferences and consider students' needs and abilities in planning, implementing, and assessing instruction.

Effective teachers use a variety of instructional strategies rather than a single approach, because effective teachers are aware that no one strategy is ideal for all students (Darling-Hammond, 2001). The strategies that teachers select influence student learning, and many researchers have identified instructional strategies that have a positive effect on student learning. Examples include cooperative learning, which is commonly used by effective teachers to involve students and develop higher order thinking skills (Shellard & Protheroe, 2000); direct instruction is used by effective teachers to clearly explain content, model concepts, offer feedback, and build understanding (Zahorik et al., 2003). Hands-on learning also results in higher student achievement than instruction without manipulatives or simulations (Wenglinisky, 2000). Instructional strategies that use students' prior knowledge in an inquiry-based, hands-on format increase student learning (Covino & Iwanicki, 1996). Fasko and Grubb (1995) found that effective teachers implement more learner-centered and active learning practices, such as critical thinking, inquiry-based practices, and hands-on activities.

### *Strategies for Instruction in Small Classes*

Given the emphasis on reducing class sizes or maintaining small class sizes in independent schools, it is important to consider whether some instructional strategies are particularly effective in smaller classes. In one research study, it was noted that class size reduction alone does not always lead to higher student

performance. Teachers must also acquire and practice effective teaching strategies (Zahorik et al., 2003). The following instructional strategies have resulted in higher student achievement in small classes:

- Emphasizing both academic learning and social skills development and both basic skills and critical thinking.
- Providing direct instruction in combination with activity-based learning.
- Providing clear directions, explaining concepts, modeling procedures, providing feedback, and scaffolding instruction for student understanding.
- Emphasizing and creating structure in both classroom and lesson management.
- Keeping a brisk and engaging instructional pace, with four or more types of activities typically included in one lesson (Zahorik et al., 2003).

Regardless of class size, it is essential to differentiate instructional strategies. For effective teaching, one size does not fit all.

### *Communicating to Students*

Effective teachers have high expectations of what students need to know and learn, and they communicate this clearly to their students. Students need to know what important concepts and skills are to be learned as well as what they must do to be successful in the class (Johnson, 1997). Students respond well to a supportive classroom environment with clear teacher explanations, and effective teachers employ two-way communication between themselves and their students. Dialogue between students and teachers is often overlooked in the teaching process, but it is essential for the learning process because it provides students with an opportunity to formulate and express what they know, why it is important, and how it relates to other knowledge. Dialogue is one of the best methods for promoting higher-level thinking (Gamoran & Nystrand, 1992).

Effective teachers not only communicate the facts and essential skills well, but they also show how the information is relevant to students' lives. Effective teachers possess a substantial knowledge about the subject matter and know how the material fits into the broader curriculum. In addition, effective teachers instruct students on the content within the larger context of the world, relating material to their day-to-day lives and other academic subjects (Bloom, 1994). Creating contexts for lessons helps students organize and remember information (Marzano, Pickering, McTighe, 1993). Effective teachers build upon prior knowledge and assist students in making the necessary connections to their existing understanding of the subject. Effective teachers know that learning involves more than just memorizing facts; it means connecting facts into mental frameworks that have meaning and represent patterns in a given subject area. To instill this deep kind of learning, teachers must combine facts and skills into instruction so that students can apply, analyze, synthesize, and evaluate those facts. Effective teachers help students construct knowledge in multiple and meaningful ways. Unfamiliar concepts are connected to familiar ones to generate new understandings or enhance a basic concept. A variety of instructional techniques provides students with necessary connections to make sense of complex information.

### *Questioning Strategies*

Effective teachers ask good questions that check for understanding of basic facts, skills, or ideas in a lesson and then push students to think critically and creatively about what they have learned. Research suggests that the way a question is posed is of critical importance. Effective teachers phrase questions to encourage students to use the required level of thinking - from basic recall to evaluation of an idea (Good & Brophy, 1997). Effective teachers are competent in using multiple levels of questioning successfully (Covino & Iwanicki, 1996).

One study found that teachers with greater subject matter knowledge tended to ask higher-level questions and engage students in more discussion opportunities using techniques such as redirection, prompting, and asking for clarification (Covino & Iwanicki, 1996). Effective teachers also teach their students how to ask questions. Learning to pose questions leads to increased interaction and articulation of ideas and opinions and will enhance students' ability to communicate about the topic. Students are transformed from being passive to active learners. This type of open dialogue encourages greater critical thinking and helps students learn to communicate (Good & Brophy, 1997).

Questioning strategies are a good way for effective teachers to increase lesson clarity and to check for understanding, questioning can also be used to individualize instruction. Questions should be clear, engaging, and should elicit student responses, even though student answers may not always be correct (Brophy & Good, 1986). Basic skills instruction requires frequent, rapidly paced questions, while instruction in higher order thinking skills and complex cognitive content requires a slower questioning speed and longer wait time between questions (Brophy & Good, 1986). Research in reading comprehension suggests that effective teachers use during-reading questions that promote student understanding of content and comprehension skills (Anthony & Raphael, 1987).

### *Student Engagement*

As indicated earlier, time on task is directly correlated with student achievement, and students who are on task are involved in learning. Effective teachers look for ways to keep students actively involved and engage in class. Techniques to accomplish this include calling on students in random order, using hands-on strategies and activities, and validating student responses (Bloom, 1994). Effective teachers also encourage students to apply, interpret, and integrate

class material into what they already know (Shellard & Protheroe, 2000). They motivate students to participate actively in the learning process, and they get students to see the value in learning (Covino & Iwanicki, 1996). Student engagement also minimizes off-task behaviors and disruptions in class. One study found that highly effective teachers had a disruptive event approximately once over two hours where ineffective teachers in the same school district had a disruption approximately every 12 minutes (Stronge, Tucker, & Ward, 2003). Effective teachers know that students who are interacting with the material and others in a constructive manner will learn more, so they do everything possible to maximize instructional activities that promote high student engagement.

When it comes to instruction, effective teachers deliver lessons that have common characteristics. Assigned tasks are appropriately difficult for students while being interesting and enjoyable. Clear expectations are communicated to students. The physical and social conditions in which learning occurs are conducive to learning. New learning is related to previous learning; attention is focused on the relevant and important aspects of the instructional materials and activities. The pace of the lesson is appropriate for students and the flow of activity in the classroom is maintained. Task-oriented behavior is reinforced through frequent substantive interaction with the teacher. Effective teachers assess students' needs and adapt instruction to meet these needs. They focus attention on the relevant and important aspects of the instructional materials and activities, and they communicate clear expectations to students.

### *Monitoring Student Progress*

Effective teachers actively and continually monitor student progress. They assess students for a variety of reasons: to gain an understanding

of students' knowledge, skills, and attitudes; to assign grades to students; to make decisions about appropriate content and objectives for students; to determine which students need extra support or instruction (Anderson, 1986). One of the ways effective teachers evaluate student performance is through instructional monitoring. Cotton (1986) defines monitoring as activities designed by teachers to keep track of student learning in order to make instructional decisions and provide feedback to students on their progress. Effective teachers maintain consistent accountability of all students' progress and implement interventions as needed to improve student learning (Brophy & Good, 1986; Porter & Brophy, 1988). They initiate substantive interactions with students instead of waiting for students to ask for help (Brophy & Good, 1986; Cotton, 1988).

### *Goals for Students*

Effective teachers define goals for their students and monitor progress toward reaching those goals. Effective teachers know not only the goals, but where their students are relative to those goals. They understand the knowledge base and skill set of each student in order to set an appropriate course for achieving goals (Airasian, 1994). Teachers must be aware of the prerequisite skills needed to make progress and must be patient in letting students attain one level of skill or knowledge before advancing to the next step (Covino & Iwanicki, 1996). They use teacher developed classroom assessment as part of the instructional process, resulting in more targeted instruction and higher levels of student performance when compared to students who are not so frequently assessed (Wenglinsky, 2000).

### *Feedback to Students*

Providing quality feedback to students is a critical component of effective teaching. Effective teachers focus on providing feedback to students that enables the student to grow

## Appendix A - Literature Review on Effective Teaching

in knowledge and skills. Feedback is not limited to assessments on work submitted by students; it includes verbal and nonverbal exchanges that occur in the classroom. Effective teachers continuously check for student understanding during the lesson and adjust based on their observations and reactions from students (Guskey, 1996). Quality feedback provides students with information about their progress on the learning goals. Feedback is part of the ongoing dialogue between the teacher and the learner that informs both parties on the extent to which the intended learning outcomes have been attained. Effective teachers give regular feedback to their students on a predictable and ongoing basis (Cotton, 2000).

Effective teachers are cognizant of the types of feedback they give to students and provide meaningful feedback to all of their students (Bloom, 1994). Effective teachers understand that specific feedback offered in a timely manner increases student achievement (Cotton, 2000; Marzano et al., 2001). In order for feedback to affect student learning and self-confidence, it must be timely and unambiguous (Porter & Brophy, 1988). Feedback is also necessary to establish new learning goals and improve achievement outcomes (Schunk, 1998).

Both formative and summative assessments offer opportunities for teachers to reflect on the effectiveness of their instruction and student learning (Wasserman, 1999), and they recognize the value of formative assessments to inform the decisions they make about ongoing instruction to students. Effective teachers use assessments not only to evaluate student work, but to inform teaching methods and instructional goals (Darling-Hammond, 1995).

### **Professional Development to Support Effective Teaching**

*You cannot improve student learning for all or most students without improving teacher learning for all or most teachers.*

-Fullan (1996, p. 41)

Continuing professional development is critical for all professionals as a means of staying current with best practices. Educators are not exceptions to this rule as the changing expectations for both students and teachers accentuate the need for strong professional development programs. Today's students are expected to investigate, question, gain deep and enduring understanding, as well as make connections between the classroom and the real world. Much of the current teaching force did not themselves learn in this manner and were not trained to teach in the learner-centered environment described above. Rogers, Abell, Lannin, Wang, Musikul, Barker and Dingman (2007) discuss this issue specifically related to the existence of standards by stating, "classroom teachers rely on professional development experiences to keep them informed of reform-based practices" (p.508).

While staying informed of best practices is essential for teachers, simply gathering information is not the most effective method of professional development. Hassel (1999) defines professional development as the process of improving staff skills and competencies needed to produce outstanding educational results for students. The ultimate goal of professional development, whether stated or unstated, is improving student learning and this cannot be accomplished without first improving teacher learning. Learning new ways to teach does not come without significant work; for some this work means unlearning the practice ingrained in them for years before moving on to learning new practices (Darling-Hammond and McLaughlin, 1995).

Desimone, Smith, and Ueno (2006) describe professional development as "an essential mechanism for deepening teachers' content knowledge and developing their teaching practices" (p.181). While there is a need for increased content and pedagogical understanding in the reform-based classrooms of today, professional development can serve a greater purpose for



educators. Effective professional development can allow teachers to think in new ways, to become curious about the subject matter, and to become motivated to change their learning and teaching to have a greater impact on their students (Kent, 2004).

### *Problems with Professional Development for Teachers*

Professional development in education is frequently considered ineffective by participants; leaving them frustrated with the time spent away from the classroom. According to Sykes (1996), “the inadequacy of conventional professional development [is] the most serious problem for policy and practice in American education” (p. 465). Issues with professional development include structure, time - both available time and the duration of the activity - the focus of the professional development, and funding.

One-day, seminar-style conferences where participants move to a new lecture hall each hour have become the norm for educators. Conferences such as this may generate ideas for participants; however there is rarely a mechanism for follow-up and the information is not specific to needs of a particular school or district. Ball (1996) states that “Traditionally, professional development and professional forums assume a stance toward practice that concentrates on answers: conveying information, providing ideas, training in skills” (p. 505). This type of professional development has become an easy way for teachers to accumulate necessary hours for recertification but has not proven to be an effective learning opportunity. Those attending for true learning become frustrated by such events, “Teachers are loath to participate in anything that smacks of 1-day workshops offered by ‘outside’ experts who know (and care) little about the particular and specific contexts of a given school” (Wilson and Berne, 1999, p. 197).

Perhaps the one-day professional development model is popular because time spent in the classroom is considered by many to be one of the most critical resources for teachers and this model minimizes the time teachers spend away from direct contact with the students. This mindset however does not take into consideration the importance of teacher learning in the process of educating students. Teachers in many Asian countries teach fewer but longer classes, each with a larger number of students, so that time can be spent during the day collaborating and developing the art of teaching (Abdal-Haqq, 1996). In America, time away from students is generally not seen in a positive light by stakeholders. The culture of education is such that teachers feel guilty taking time to attend professional development activities because they cannot teach their children if they are not in the classroom. (Abdal-Haqq, 1996, p.4). Research has not indicated that time away from the classroom is linked to improvement in student achievement and it is therefore considered by many to be a barrier to student learning.

Lieberman (1995) illuminates the issue with professional development by stating, “what everyone appears to want for students - a wide array of learning opportunities that engage students in experiencing, creating, and solving real world problems, using their own experiences, and working with others - is for some reason denied to teachers when they are learners” (p.591). Kent (2004) describes the issues with professional development to be “short duration, low intellectual level, poor focus, and little substantive research-based content” (p.428). Teachers are expected to provide students with opportunities for in-depth learning and understanding yet teachers are not given the same opportunities through professional development. The responsibility for this problem does not lie solely with the providers of professional development. Teachers often come to professional development

activities in the frame of mind that nothing needs to change about their content knowledge or what they know about their students (Wilson and Berne, 1999). Both teachers and professional development providers must recognize the need for teachers to change their way of thinking and learning about content and pedagogical knowledge.

Funding for professional development efforts is also problematic as it is generally considered to be either too small or misdirected into unsuccessful programs. Teachers are not receiving the type of programming needed to impact student achievement even though some research is beginning to show a positive connection. Money spent on developing teachers, including professional development activities, has been shown to be the school resource having the greatest impact on student achievement (Kent, 2004). Despite these findings, school districts spend minimal amounts on professional development for teachers and this line item is often the first to be cut when budgets are tight. It is important that education agencies recognize that reforms cannot effectively be enacted without the funding support for professional development for teachers.

### *Characteristics of Effective Professional Development*

Guskey's (2003) review of effective professional development literature provides a list of some of the most common practices but also sheds light on the difficulty of defining effectiveness in professional development. The practices found by Guskey to appear most often in the literature were rarely supported by research or connected to student achievement. This lack of connection is concerning as, by the definition presented previously, professional development should be associated with student learning. The three most common aspects of effective professional development identified by Guskey are: enhancement of teachers' content and peda-

gogical knowledge, sufficient time and other resources, and collegiality and collaborative exchange. These three practices are also common in much of the literature beyond that reviewed by Guskey.

As Guskey suggests, a focus on content and pedagogical knowledge in professional development is considered essential despite the dearth of research-based support. While Garet, Porter, Desimone, Birman and Yoon (2001) consider the "degree of content focus as a central dimension of high-quality professional development" (p.925), the need for the inclusion of pedagogical knowledge in professional development cannot be ignored. Darling-Hammond and McLaughlin (1995) support this by discussing that the focus of professional development must be on "deepening teachers' understanding of the process of teaching and learning and of the students they teach" (p. 598). Many studies highlight the importance of both content and pedagogical knowledge yet few show a connection between content and pedagogical content of professional development activities and student achievement. Ball (1996) looks at teacher learning in mathematics classrooms and indicates that the teacher's level of mathematical knowledge is very important in supporting student learning. This link found in both mathematics and science classes requires further research while such a connection has rarely even been discussed in the other core contents. Familiarity with both content and pedagogy can be strengthened through effective professional development activities and this strengthening is expected to play a role in increasing student achievement.

The second effective professional development practice identified by Guskey (2003) is sufficient time and other resources. Some element of time is mentioned in most literature on effective professional development but time as it relates to professional development activities can be seen through many lenses. Time is typically referred to in connection with duration or



frequency of activities as well as follow-up elements. Guskey makes an important point as he indicates that time alone is not enough to contribute to the effectiveness of the activity; the activity must also be high quality in order for time to become a factor. Time spent on low quality activities does not make the professional development effective. The actual time spent in the activity is certainly the most common idea yet it is not indicative of the total time involved in teacher learning. Effective professional development must not only be high quality but must involve follow-up activities of some type. These activities must be designed to support the teacher learning from the activity and often come in the form of individual coaching, classroom observations or professional learning communities (Ball, 1996; Kent, 2004).

Activities over time provide two important opportunities for teachers: 1) in-depth discussions about content and pedagogical knowledge and 2) the chance to put new learning into practice and get feedback on performance (Garet et al, 2001). Supporting the importance of time spent in high quality activities, Ball (1996) states that changes don't happen overnight as a result of teachers deciding to teach differently. Teachers must be given the necessary time to reflect on their practice, discuss best practices, learn new strategies - and sometimes unlearn the old - in order to implement these strategies into their classroom before student learning can begin to be improved (Darling-Hammond and McLaughlin, 1995).

Collegiality and collaborative exchange is also considered to be among the most important aspects of effective professional development in the literature. When sufficient time is provided for teachers to concentrate on content and pedagogical learning, discussing, idea sharing, and becoming involved in supportive communities of learners occurs (Lieberman, 1995; Jeanpierre, Oberhaus, and Freeman, 2005). As

teachers progress, they grapple with strengthening their content base, learning more about how their students learn, and implementing a new way of teaching. These struggles are necessary for each individual but the process should not be entered into alone. Teachers of all ages, backgrounds, and experience levels can contribute to the learning of others by sharing their experiences and engaging in discourse about teaching and learning. While it is agreed upon that collaboration is important, there are conflicting opinions about the structure of this collaboration. Rogers, Abell, Lannin, Wang, Musikul, Barker and Dingman (2007) state that professional development programs are more effective when groups of teachers from the same school attend. Others agree that teachers in attendance should have some common identifier, be it school, subject taught or grade-level (Wilson and Berne, 1999; Garet et al., 2001). The focus should not be on individual teachers yet there is some benefit to attending professional development as an individual when collaborative communities are built during the activities. Individuals who become active members of learning communities outside their own building are strengthening their teaching and learning knowledge base.

Time, content and pedagogical focus, and collaboration appear in most literature on effective professional development in one form or another but they alone do not complete the recipe in today's reform-driven educational environment. Many authors provide characteristics beyond those three that, it can be argued, are equally as important to the success of teacher learning. Darling-Hammond and McLaughlin (1995) add the need for professional-development to be participant driven. Historically, professional development activities have been planned and offered by district and building administrators or outside agencies. This type of planning has given teachers a large range of options of activities but has not proven to provide effective opportunities

for learning. Teachers become more actively involved in professional development and are more likely to integrate the learning into their classrooms when they participate in the planning (Smith and Rowley, 2005).

Garet et al. (2001) emphasize the importance of the types of activities in which teachers participate. It is not enough that there is a content focus and ample time allowed. The participants must be actively learning, unlike conference or workshop style offerings, with opportunities to observe and be observed, review student work, and develop classroom implementation plans. Teachers should also be recognized as professionals and adult learners and a premium should be placed on ensuring that quality learning opportunities are available for all teachers (Abdal-Haqq, 1996).

### *Supporting Effective Professional Development*

The characteristics of effective professional development described above cannot exist without support from policymakers and system and building-level administrators. Changes in policy, funding, and organizational structure are all required to ensure the opportunity for effective professional development for teachers. These changes must be specific to the needs determined at a local level as decisions made from a distance are not grounded in the situational context and are likely to fail (Darling-Hammond and McLaughlin, 1995). The changes must include adequate funding and modifications to the organizational structure that allow for teaching and learning in a collaborative environment.

Professional communities of learners are more likely to thrive in organizational structures designed to support such collaborations. Building time for collaboration into the school or district schedule is a necessity. Districts and schools can redistribute time, allowing teachers to participate in learning opportunities by doing any of the following: 1) extending the day or year, 2)

changing the structure of the daily schedule, and 3) using existing staff in unique ways (Abdal-Haqq, 1996). Building a collaborative environment requires buy-in from all levels. Once this buy-in exists, teachers begin to feel comfortable taking advantage of opportunities, engaging in discourse, and taking risks in the classroom; all for the goal of improving student learning.

### **Personal Characteristics of Effective Teachers**

In addition to content knowledge and pedagogical skills, some researches contend teachers need certain personality characteristics to be effective. Some of these character traits include enthusiasm, warmth, supportiveness of students, sensitivity, interest in people, flexibility, and self-confidence (Shechtman, 1989).

Effective teachers are well-prepared professionals who combine their knowledge of the content and instruction with a deep sense of caring about their students. Effective teachers are not only caring, but attentive and attuned to their students' interests and needs both in and out of school (Johnson, 1997; Cruickshank & Haefele, 2001). Teachers who show they care about students enhance the learning process and serve as role models to students (Collinson et al., 1999). A study of teachers revealed that both effective and ineffective teachers were equally respectful to their students, but the effective teachers demonstrated better listening skills (Emmer, Evertson, & Anderson, 1980). Caring teachers create relationships where respect and learning are fostered so students feel safe taking risks that are associated with learning (Collinson et al., 1999).

Effective teachers demonstrate respect to students in a variety of ways, including how they treat students and how they interact with students' families. Respectful teachers know their students by name early in the school year, value individual talents and abilities, are aware of students' moods, and respond to changes they

observe in students (Burden & Byrd, 1994). Effective teachers also recognize the important role families play in their children's education and respond to families' desire to be involved, ranging from simple regular communication to collaboration. Effective teachers have been found to correspond more frequently with parents (Taylor, Pearson, Clark, & Walpole, 1999), using a variety of means such as phone calls, notes, letters, home visits, e-mails, and face to face meetings (Collinson et al., 1999).

Deliberate and thoughtful reflection is an important part of professional practice. According to one researcher, reflection is an internal supervisor that encourages teachers to consider what was effective and refine what was not effective about their instruction (Harris, 2003). Effective teachers demonstrate a continuous and lifelong practice of reflection (Grossman et al., 2000; Thomas & Montgomery, 1998). Effective teachers know themselves and their goals and reflect on their progress toward meeting them. Reflection creates alignment between what teachers know and their actions (Corcoran & Leahy, 2003). Reflection may be driven by questions, research, new experiences, observations, journals, and discussion with colleagues. Effective teachers reflect on their own teaching and students' responses in order to find out what was successful and what was unsuccessful in order to refine their own teaching practices (Porter & Brophy, 1988).

Effective teachers exude a sense of pride and accomplishment in their work. Teachers and administrators who model high expectations for themselves tend to get better results from their students (Cawelti, 1999). Teachers' attitudes about the profession most directly affect the school climate. Some teachers are collegial in demeanor, while others are disengaged or negative. A collegial and positive approach and attitude enhances the school climate and the learning environment for students. Teachers who are collegial serve the school through

participation on committees, acting as mentors, supervising student teachers, supporting other teachers, and assuming leadership roles. Positive attitudes create a healthy community that affects personal commitment, motivation, efficacy, and performance in the classroom (NWREL, 2001). A positive and productive school climate has the added benefits of infusing its members with increased satisfaction, enthusiasm, commitment, and empowerment as educators (Holloway, 2003).

Research dating back to the early 1970s has identified a connection between teacher effectiveness and verbal ability (Hanushek, 1971). While high verbal test scores do not guarantee effective teaching, verbal ability is an indicator of teacher effectiveness because it relates to how well a teacher communicates with and conveys concepts and skills to students (Darling-Hammond, 2001). Studies have shown that students of teachers with strong verbal skills learn more than their peers taught by teachers with lower verbal skills (Haycock, 2000; Rowan, Chiang, & Miller, 1997).

### Conclusion

Effective teaching is complex and comprises many facets: teacher background, characteristics, and preparation; professional practices; and professional development. However, despite the complexity surrounding effective teaching, significant research supports what works with regard to effective teaching. While most research has been conducted in the public sector, the findings, particularly those regarding teacher characteristics, preparation, professional practices, and professional development, can be applied to independent school settings as well.

## Appendix B - Survey Instrument Maps

### Source Map

Survey Questions	Project Questions	Source
Q1 A-F	1	Principal Questionnaire - School of Ed Research Project
Q2 A-B	1	Literature - Darling-Hammond
Q3 A, C, D, I	1	Principal Questionnaire - School of Ed Research Project
Q3 B, C, E-H	1	Literature - Stronge, Danielson
Q4 A, B, F-J	1	Principal Questionnaire - School of Ed Research Project
Q4 C-E	1	Literature - Stronge, Danielson
Q5 A-E, G-I	1	Literature - Stronge, Danielson
Q5 F	1	Principal Questionnaire - School of Ed Research Project
Q6 A, C, D, I	2, 5	Principal Questionnaire - School of Ed Research Project
Q6 B, C, E-H	2, 5	Literature - Stronge, Danielson
Q7 A, B, F-J	2, 5	Literature - Stronge, Danielson
Q7 C-E	2, 5	Principal Questionnaire - School of Ed Research Project
Q8 A-E, G-I	2, 5	Literature - Stronge, Danielson
Q8 F	2, 5	Principal Questionnaire - School of Ed Research Project
Q9 A-E, H, J, L	3	Literature - Stronge, Danielson
Q9 F, G, I, K	3	Schools and Staffing Survey (SASS)
Q10	3	Literature - Stronge, Danielson
Q11	3	Schools and Staffing Survey (SASS)
Q12 A-E, H, J, L	4, 5	Literature - Stronge, Danielson
Q12 F, G, I, K	4, 5	Schools and Staffing Survey (SASS)

### Concept Map

Domains of Professional Practice	Survey Question(s)	Project Question(s)
Planning and preparation	Q3 A-E, H, I; Q6 A-E, H, I; Q9 A-B	1, 2, 3, 5
Classroom environment	Q4 A-F; Q7 A-F; Q9 H-I	1, 2, 3, 5
Instruction	Q4 G-I; Q5 A; Q7 G-I; Q8 A; Q9 C-G	1, 2, 3, 5
Professional responsibilities	Q4 J; Q5 B-I; Q7 J; Q8 B-I; Q9 K-L; Q10	1, 2, 3, 5
Qualities of Effective Teachers	Survey Question(s)	Project Question(s)
Prerequisites for effective teaching	Q1 A-G; Q2 A-C; Q3 A; Q6 A; Q9 A-B	1, 2, 3, 5
Teacher as a person	Q4 A, J; Q5 A-I; Q7 A, J; Q8 A-I; Q9 J	1, 2, 3, 5
Teacher as classroom manager and organizer	Q4 B-F; Q7 B-F; Q9 H-I	1, 2, 3, 5
Organizing for instruction	Q3 D; Q6 D; Q9 C	1, 2, 3, 5
Implementing instruction	Q3 B, E, F, G, I; Q4 G, I; Q6 B, E, F, G, I; Q7 G, I; Q9 D-E, G	1, 2, 3, 5
Monitoring student progress	Q3 C, E, G, H; Q4 H; Q6 C, E, G, H; Q7 H; Q9 F	1, 2, 3, 5
Characteristics of Effective Professional Development	Survey Question(s)	Project Question(s)
Involvement/Collaboration	Q10 A, B	3
Influence	Q11	3
Content	Q9, Q12	3, 4, 5
Implementation	Q10 C-E, H, I	3, 4
Evaluation	Q10 F, G	3, 4

## Appendix C - Survey Instrument

### Hiring Practices

**Q1. Administrators hire teachers with a variety of preparation backgrounds. We would like to know from which backgrounds you have hired and which you prefer.**

(circle one number for each item)		Have hired	Rank your preferences 1-6 with 1 most important
A.	Undergraduate degree with an academic (content area) major	Y/N	
B.	Undergraduate degree in education	Y/N	
C.	Undergraduate degree with an academic major and advanced degree with an academic major	Y/N	
D.	Undergraduate degree with an academic major and advanced degree in education	Y/N	
E.	Undergraduate degree in education and advanced degree in education	Y/N	
F.	Undergraduate degree in education and advanced degree with an academic major	Y/N	
G.	Other _____	Y/N	

### Teacher Certification

**Q2. How important is it that teachers you hire:**

(circle one number for each item)		Very Important	Important	Somewhat Important	Not Important
A.	Hold a current teaching certificate	1	2	3	4
B.	Held a teaching certificate at some point	1	2	3	4



### Content and Pedagogical Knowledge

Q3. How important is it that teachers you hire:

(circle one number for each item)		Very Important	Important	Somewhat Important	Less Important
A.	Display a mastery of their subject area	1	2	3	4
(circle one number for each item)		Very Important	Important	Somewhat Important	Less Important
B.	Held a teaching certificate at some point	1	2	3	4
C.	Demonstrate knowledge of how students learn and child development	1	2	3	4
D.	Demonstrate knowledge of teaching resources	1	2	3	4
E.	Design instruction that meets a variety of student learning styles	1	2	3	4
F.	Design instruction that is engaging to students	1	2	3	4
G.	Differentiate instruction to meet a variety of student abilities and needs	1	2	3	4
H.	Assess student learning in a variety of ways	1	2	3	4
I.	Integrate technology in instruction	1	2	3	4

## Appendix C - Survey Instrument

### Classroom Environment

Q4. How important is it that teachers you hire:

(circle one number for each item)		Very Important	Important	Somewhat Important	Less Important
A.	Create an environment of respect and rapport in the classroom	1	2	3	4
B.	Establish a culture for learning in the classroom	1	2	3	4
C.	Manage classroom procedures	1	2	3	4
D.	Maintain order and discipline in the classroom	1	2	3	4
E.	Manage student behavior	1	2	3	4
F.	Organize physical space for an optimal learning environment	1	2	3	4
G.	Use a variety of questioning and discussion techniques	1	2	3	4
H.	Provide meaningful feedback to students	1	2	3	4
I.	Demonstrate flexibility and responsiveness	1	2	3	4
J.	Demonstrate a positive attitude and enthusiasm for teaching	1	2	3	4

## Appendix C - Survey Instrument

Communication, Community, and Growth

Q5. How important is it that teachers you hire:

(circle one number for each item)		Very Important	Important	Somewhat Important	Less Important
A.	Communicate clearly and accurately with students	1	2	3	4
B.	Communicate clearly and accurately with colleagues	1	2	3	4
C.	Communicate clearly and accurately with parents	1	2	3	4
D.	Communicate clearly and accurately with administrators	1	2	3	4
E.	Have professional interactions with parents	1	2	3	4
F.	Work well with colleagues	1	2	3	4
G.	Contribute to the overall school community	1	2	3	4
H.	Grow and develop professionally	1	2	3	4
I.	Show professionalism	1	2	3	4

## Appendix C - Survey Instrument

### Current Teachers

#### Content and Pedagogical Knowledge

Q6. Thinking about your current teachers, how well do they do the following:

(circle one number for each item)		Very Well	Well	Fairly Well	Not Well
A.	Display a mastery of their subject area	1	2	3	4
B.	Demonstrate knowledge of pedagogy and teaching strategies	1	2	3	4
C.	Demonstrate knowledge of how students learn and child development	1	2	3	4
D.	Demonstrate knowledge of teaching resources	1	2	3	4
E.	Design instruction that meets a variety of student learning styles	1	2	3	4
F.	Design instruction that is engaging to students	1	2	3	4
G.	Differentiate instruction to meet a variety of student abilities and needs	1	2	3	4
H.	Assess student learning in a variety of ways	1	2	3	4
I.	Integrate technology in instruction	1	2	3	4

### Classroom Environment

**Q7. Thinking about your current teachers, how well do they do the following:**

(circle one number for each item)		Very Well	Well	Fairly Well	Not Well
A.	Create an environment of respect and rapport in the classroom	1	2	3	4
B.	Establish a culture for learning in the classroom	1	2	3	4
C.	Manage classroom procedures	1	2	3	4
D.	Maintain order and discipline in the classroom	1	2	3	4
E.	Manage student behavior	1	2	3	4
F.	Organize physical space for an optimal learning environment	1	2	3	4
G.	Use a variety of questioning and discussion techniques	1	2	3	4
H.	Provide meaningful feedback to students	1	2	3	4
I.	Demonstrate flexibility and responsiveness	1	2	3	4
J.	Demonstrate a positive attitude and enthusiasm for teaching	1	2	3	4



## Appendix C - Survey Instrument

Communication, Community, and Growth

Q8. Thinking about your current teachers, how well do they do the following:

(circle one number for each item)		Very Well	Well	Fairly Well	Not Well
A.	Communicate clearly and accurately with students	1	2	3	4
B.	Communicate clearly and accurately with colleagues	1	2	3	4
C.	Communicate clearly and accurately with parents	1	2	3	4
D.	Communicate clearly and accurately with administrators	1	2	3	4
E.	Have professional interactions with parents	1	2	3	4
F.	Work well with colleagues	1	2	3	4
G.	Contribute to the overall school community	1	2	3	4
H.	Grow and develop professionally	1	2	3	4
I.	Show professionalism	1	2	3	4

## Appendix C - Survey Instrument

### Professional Development

Q9. In which of the following areas for professional development have your teachers received training in this year? Please check all that apply.

		Check all that apply
A.	Development of Content Knowledge	
B.	Development of Pedagogical Knowledge, i.e. teaching strategies, how students learn, and use of teaching resources	
C.	Planning for Instruction, i.e. designing instruction that is engaging, addresses a variety of learning styles	
D.	Instructional Delivery, i.e. differentiating instruction, using a variety of questioning and discussion techniques, providing meaningful feedback to students	
E.	Designing instruction that meets a variety of student learning styles	
F.	Assessing Student Learning	
G.	Integrating Technology into Instruction	
H.	Management of Classroom Environment, i.e. establishing culture of learning, environment of respect and rapport	
I.	Maintaining Order and Discipline, i.e. managing classroom procedures, managing student behavior, organizing the physical space for optimal learning	
J.	Teacher Attitudes, i.e. demonstrating enthusiasm for teaching, flexibility, responsiveness	
K.	Communication, i.e. communicating clearly and accurately with students, parents, colleagues, and administrators	
L.	Professionalism, i.e. working well with parents and colleagues, contributing to the school community, growing and developing in the profession	
M.	Other _____	

## Appendix C - Survey Instrument

**Q10. How often is professional development for teachers at this school:**

(circle one number for each item)		Always	Frequently	Sometimes	Never
A.	Planned by teachers	1	2	3	4
B.	Planned by administrators or other support staff	1	2	3	4
C.	Delivered by teachers	1	2	3	4
D.	Delivered by administrators or other support staff	1	2	3	4
E.	Delivered by an outside organization (school is not involved in planning or delivery)	1	2	3	4
F.	Evaluated for evidence of improvement in teacher classroom practice	1	2	3	4
G.	Evaluated for evidence of effects on student achievement	1	2	3	4
H.	Accompanied by the resources that teachers need (e.g., time and materials) to make changes in the classroom	1	2	3	4
I.	Sustained over time (e.g. multiple meetings over the course of the school year)	1	2	3	4

**Q11. How much influence do the following groups or individuals have on decisions related to the content of professional development for teachers at this school:**

(circle one number for each item)		Major Influence	Moderate Influence	Mild Influence	No Influence	N/A
A.	Governing board	1	2	3	4	5
B.	Head of School/Administration	1	2	3	4	5
C.	Teachers	1	2	3	4	5
D.	Curriculum Specialists	1	2	3	4	5
E.	Parents	1	2	3	4	5
F.	Other _____	1	2	3	4	5

## Appendix C - Survey Instrument

Q12. Thinking about your current teachers, which of the following would be your priorities for professional development? Please rank your top three areas.

		Rank your priorities 1-3 with 1 most important
A.	Development of Content Knowledge	
B.	Development of Pedagogical Knowledge, i.e. teaching strategies, how students learn, and use of teaching resources	
C.	Planning for Instruction, i.e. designing instruction that is engaging, addresses a variety of learning styles	
D.	Instructional Delivery, i.e. differentiating instruction, using a variety of questioning and discussion techniques, providing meaningful feedback to students	
E.	Designing instruction that meets a variety of student learning styles	
F.	Assessing Student Learning	
G.	Integrating Technology into Instruction	
H.	Management of Classroom Environment, i.e. establishing culture of learning, environment of respect and rapport	
I.	Maintaining Order and Discipline, i.e. managing classroom procedures, managing student behavior, organizing the physical space for optimal learning	
J.	Teacher Attitudes, i.e. demonstrating enthusiasm for teaching, flexibility, responsiveness	
K.	Communication, i.e. communicating clearly and accurately with students, parents, colleagues, and administrators	
L.	Professionalism, i.e. working well with parents and colleagues, contributing to the school community, growing and developing in the profession	
M.	Other _____	

## Appendix C - Survey Instrument

### About This School

- Q13. How many students are currently enrolled in this school? \_\_\_\_\_
- Q14. Which of the following best describes this school?
- a. Upper school only
  - b. Middle and upper schools
  - c. Lower, middle and upper schools
- Q15. Which of the following best describes this school?
- a. Urban
  - b. Suburban
  - c. Rural
- Q16. Which of the following best describes this school?
- a. Co-educational
  - b. Male only
  - c. Female only
- Q17. Which of the following best describes this school?
- a. Secular
  - b. Non-secular
- Q18. How many upper school teachers do you have in the following disciplines?  
Please include each teacher in only one discipline
- a. English
  - b. History
  - c. Mathematics
  - d. Science

### About You

- Q19. What is your job title? \_\_\_\_\_
- Q20. Which of the following best describes your academic background?
- a. Bachelors degree
  - b. Bachelors degree plus additional coursework
  - c. Masters degree
  - d. Masters degree plus additional coursework
  - e. Doctoral degree
- Q21. Were you a classroom teacher before becoming an administrator? If so, for how many years?  
What subject(s) did you teach?

**Thank you for completing this survey.**



### General Information

Provide descriptive information about schools (size, location, religious affiliation, genders served) and respondents (academic background, classroom teaching experience)

**Q1. What factors related to effective teaching are important to SAIS Heads of School when hiring teachers?**

- a. From which academic preparation backgrounds do SAIS Heads of School hire?
  - Descriptive on the 7 “Have Hired” scales - percentages hiring in each category
- b. **From which academic preparation backgrounds do SAIS Heads of School prefer to hire?**
  - Mean and Mode for each of the 7 “Rank Hiring Priority” scales with a new order based on this information

**Used to answer a and b:**

- Correlations between “Have Hired” and “Rank Hiring Priority” scale items
- c. **How important is teacher certification to SAIS Heads of School when hiring?**
    - Mean and Mode for each of the 2 “Certification” scales
  - d. **Is there a relationship between school characteristics and the hiring practices of SAIS Heads of School?**
  - e. **Is there a relationship between academic background characteristics and the hiring practices of SAIS Heads of School?**

**Used to answer d and e:**

- ANOVA on both scales using the following: school size categories (Under 201, 201-300, 301-500, 501- 700 and Over 700), school location (rural, suburban and urban), school religious affiliation (secular, non-secular), academic background of respondent (Bachelors degree, Bachelors degree plus additional coursework, Masters degree, Masters degree plus additional coursework, Doctoral degree), classroom teaching experience (yes or no), years taught (0-6, 7-11, 12-19, 20+, not applicable). School gender served was not used because only 6 of the 163 responding schools indicated that they are single-gender schools.
  - Tukey tests on all of the above except school religious affiliation and classroom teaching experience - test cannot be performed with fewer than 3 categories.
- f. **What professional practices of effective teaching do SAIS Heads of School find important?**
    - Mean and Mode for each of the 28 “Importance” scales
  - g. **Is there a relationship between school characteristics and the professional practices of effective teaching SAIS Heads of School find important?**
  - h. **Is there a relationship between academic background characteristics and the professional practices of effective teaching SAIS Heads of School find important?**

**Used to answer g and h:**

- ANOVA on each of the 28 “Importance” scales using the same categories listed above.
- Tukey tests as described above

**Q2. What are SAIS Head’s perceptions of the extent to which their current teachers demonstrate effective teaching practices?**

- Mean and Mode for each of the 28 “How Well” scales
- a. Is there a relationship between school characteristics and the extent to which SAIS Heads of School perceive that their current teachers demonstrate effective teaching practices?
- b. Is there a relationship between academic background characteristics and the extent to which SAIS Heads of School perceive that their current teachers demonstrate effective teaching practices?

Used to answer a and b:

- ANOVA on each of the 28 “How Well” scales using the same categories listed above
- Tukey tests as described above

**Q3. What is the nature of professional development related to effective teaching in SAIS schools?**

- a. What has been offered?
  - Descriptive statistics reporting the frequency of each type of offering
  - Graph comparing percentage of respondents receiving each type of training
- b. Who makes the decisions?
  - Descriptive statistics reporting mean level of influence on the decision-making for professional development
- c. How is it provided?
  - Descriptive statistics reporting mean level of frequency
  - Categories may overlap

**Additional questions for analysis**

1. Is there a relationship between school characteristics and professional development offerings?  
Cross-tab analysis; Spearman correlation between 1. school size, 2. school location, 3. school religious affiliation and professional development offerings
2. Is there a relationship between Heads’ academic backgrounds and professional development offerings?  
Cross tab-analysis; Spearman correlation between 1. degree level, 2. teaching experience, 3. years of teaching and professional development offerings
3. Is there a relationship between school characteristics and the individuals who influence decisions about professional development?  
One-way ANOVA will be used with school characteristic variables and influence scale.
4. Is there a relationship between Heads’ academic backgrounds and the individuals who influence decisions about professional development?  
One-way ANOVA will be used with academic background variables and influence scale

**5. Is there a relationship between school characteristics and how professional development is provided?**

Cross-tab analysis; Spearman correlation between each of the school characteristics and each method of providing professional development

**6. Is there a relationship between Heads' academic backgrounds and how professional development is provided?**

Cross-tab analysis; Spearman correlation between each academic characteristic and each method of providing professional development

**Q4. What are SAIS Heads' priorities for teacher professional development?**

- Descriptive frequencies
- Graphs to show comparisons

**Additional Questions for Analysis**

**1. Is there a relationship between school characteristics and priorities for professional development?**

Cross-tab analysis; Spearman correlation between each of the school characteristics and each professional development offering

**2. Is there a relationship between Heads' academic backgrounds and priorities for professional development?**

Cross-tab analysis; Spearman correlation between each of the academic characteristics and each professional development offering

**Q5. To what extent are Heads' priorities for professional development aligned with the strengths and weaknesses of their teachers?**

- Spearman correlation between "Professional Development Priorities" and "How Well" scales; looking for significant negative correlation

## Appendix E - Data Tables

**Table E.1: ANOVA Results for Relationships between Degree Combinations Hired and School Type**

		Sum of Squares	df	Mean Square	F	Sig.
Undergraduate degree with an academic (content area) major	Between Groups	.038	4	.010	.378	.824
	Within Groups	3.860	152	.025		
	Total	3.898	156			
<b>Undergraduate degree in education</b>	Between Groups	3.561	4	.890	<b>12.309</b>	<b>.000</b>
	Within Groups	10.777	149	.072		
	Total	14.338	153			
Undergraduate degree with an academic major and advanced degree with an academic major	Between Groups	.266	4	.066	.939	.443
	Within Groups	10.823	153	.071		
	Total	11.089	157			
Undergraduate degree with an academic major and advanced degree in education	Between Groups	.089	4	.022	.703	.591
	Within Groups	4.750	150	.032		
	Total	4.839	154			
<b>Undergraduate degree in education and advanced degree in education</b>	Between Groups	5.134	4	1.284	<b>10.095</b>	<b>.000</b>
	Within Groups	18.183	143	.127		
	Total	23.318	147			
Undergraduate degree in education and advanced degree with an academic major	Between Groups	.334	4	.083	.382	.821
	Within Groups	31.465	144	.219		
	Total	31.799	148			

**Table E.2 – Post Hoc Results for Differences in Means Between Degree Combinations Hired and School Type**

Degree Combination	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Undergraduate degree in education	Lower School Only	Lower and Middle Schools	.000	.142	1.000
		Lower, Middle and Upper Schools	.053	.113	.990
		Middle and Upper Schools	.571**	.131	.000
		Upper School Only	.167	.134	.728
	Lower and Middle Schools	Lower School Only	.000	.142	1.000
		Lower, Middle and Upper Schools	.053	.093	.979
		Middle and Upper Schools	.571**	.115	.000
		Upper School Only	.167	.119	.625
	Lower, Middle and Upper Schools	Lower School Only	-.053	.113	.990
		Lower and Middle Schools	-.053	.093	.979
		Middle and Upper Schools	.518**	.076	.000
		Upper School Only	.114	.082	.634
	Middle and Upper Schools	Lower School Only	-.571**	.131	.000
		Lower and Middle Schools	-.571**	.115	.000
		Lower, Middle and Upper Schools	-.518**	.076	.000
		Upper School Only	-.405**	.106	.002
Upper School Only	Lower School Only	-.167	.134	.728	
	Lower and Middle Schools	-.167	.119	.625	
	Lower, Middle and Upper Schools	-.114	.082	.634	
	Middle and Upper Schools	.405**	.106	.002	
Undergraduate degree in education and advanced degree in education	Lower School Only	Lower and Middle Schools	.000	.214	1.000
		Lower, Middle and Upper Schools	.144	.181	.932
		Middle and Upper Schools	.769**	.204	.002
		Upper School Only	.273	.208	.686
	Lower and Middle Schools	Lower School Only	.000	.214	1.000
		Lower, Middle and Upper Schools	.144	.124	.770
		Middle and Upper Schools	.769**	.155	.000
		Upper School Only	.273	.160	.436



## Appendix E - Data Tables

Lower, Middle and Upper Schools	Lower School Only	-.144	.181	.932
	Lower and Middle Schools	-.144	.124	.770
	Middle and Upper Schools	.625**	.105	.000
	Upper School Only	.129	.113	.785
Middle and Upper Schools	Lower School Only	-.769**	.204	.002
	Lower and Middle Schools	-.769**	.155	.000
	Lower, Middle and Upper Schools	-.625**	.105	.000
	Upper School Only	-.497**	.146	.008
Upper School Only	Lower School Only	-.273	.208	.686
	Lower and Middle Schools	-.273	.160	.436
	Lower, Middle and Upper Schools	-.129	.113	.785
	Middle and Upper Schools	.497**	.146	.008

\*p<.01

**Table E.3: ANOVA Results for Relationships between Degree Combinations Preferred and School Size**

Degree Combination		Sum of Squares	df	Mean Square	F	Sig.
Undergraduate degree with an academic (content area) major	Between Groups	14.124	4	3.531	1.137	.342
	Within Groups	416.308	134	3.107		
	Total	430.432	138			
<b>Undergraduate degree in education</b>	Between Groups	27.632	4	6.908	<b>2.998</b>	<b>.021</b>
	Within Groups	313.404	136	2.304		
	Total	341.035	140			
<b>Undergraduate degree with an academic major and advanced degree with an academic major</b>	Between Groups	36.271	4	9.068	<b>3.607</b>	<b>.008</b>
	Within Groups	331.861	132	2.514		
	Total	368.131	136			
Undergraduate degree with an academic major and advanced degree in education	Between Groups	11.771	4	2.943	1.817	.129
	Within Groups	223.473	138	1.619		
	Total	235.245	142			
<b>Undergraduate degree in education and advanced degree in education</b>	Between Groups	34.742	4	8.686	<b>3.257</b>	<b>.014</b>
	Within Groups	354.714	133	2.667		
	Total	389.457	137			
Undergraduate degree in education and advanced degree with an academic major	Between Groups	8.812	4	2.203	1.025	.396
	Within Groups	300.816	140	2.149		
	Total	309.628	144			

## Appendix E - Data Tables

**Table E.4 – Post Hoc Results for Differences in Means Between Degree Combinations Preferred and School Size**

Degree Combination	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Undergraduate degree in education	Under 201	201 - 300	.324	.451	.952
		301 - 500	-.002	.380	1.000
		501 - 700	-.324	.451	.952
		Over 700	-.898	.348	.080
	201 - 300	Under 201	-.324	.451	.952
		301 - 500	-.325	.461	.955
		501 - 700	-.647	.521	.726
		Over 700	-1.222*	.435	.044
	301 - 500	Under 201	.002	.380	1.000
		201 - 300	.325	.461	.955
		501 - 700	-.322	.461	.957
		Over 700	-.896	.361	.101
	501 - 700	Under 201	.324	.451	.952
		201 - 300	.647	.521	.726
		301 - 500	.322	.461	.957
		Over 700	-.575	.435	.679
Over 700	Under 201	.898	.348	.080	
	201 - 300	1.222*	.435	.044	
	301 - 500	.896	.361	.101	
	501 - 700	.575	.435	.679	
Undergraduate degree with an academic major and advanced degree with an academic major	Under 201	201 - 300	-.045	.465	1.000
		301 - 500	.695	.420	.467
		501 - 700	.510	.465	.807
		Over 700	1.222*	.367	.010
	201 - 300	Under 201	.045	.465	1.000
		301 - 500	.740	.490	.558
		501 - 700	.556	.529	.831
		Over 700	1.267*	.445	.040
	301 - 500	Under 201	-.695	.420	.467
		201 - 300	-.740	.490	.558
		501 - 700	-.184	.490	.996
		Over 700	.527	.399	.678
	501 - 700	Under 201	-.510	.465	.807
		201 - 300	-.556	.529	.831
		301 - 500	.184	.490	.996
		Over 700	.712	.445	.501
Over 700	Under 201	-1.222*	.367	.010	
	201 - 300	-1.267*	.445	.040	
	301 - 500	-.527	.399	.678	
	501 - 700	-.712	.445	.501	
Undergraduate degree in education and advanced degree in education	Under 201	201 - 300	.753	.479	.518
		301 - 500	-.414	.424	.865
		501 - 700	.097	.509	1.000
		Over 700	-.770	.374	.245

## Appendix E - Data Tables

201 - 300	Under 201	-.753	.479	.518
	301 - 500	-1.167	.497	.137
	501 - 700	-.656	.571	.780
	Over 700	-1.522**	.455	.009
301 - 500	Under 201	.414	.424	.865
	201 - 300	1.167	.497	.137
	501 - 700	.511	.526	.867
	Over 700	-.356	.398	.899
501 - 700	Under 201	-.097	.509	1.000
	201 - 300	.656	.571	.780
	301 - 500	-.511	.526	.867
	Over 700	-.867	.487	.390
Over 700	Under 201	.770	.374	.245
	201 - 300	1.522**	.455	.009
	301 - 500	.356	.398	.899
	501 - 700	.867	.487	.390

\*p<.05, \*\*p<.01

**Table E.5: ANOVA Results for Relationships between Degree Combinations Preferred and School Type**

		Sum of Squares	df	Mean Square	F	Sig.
Undergraduate degree with an academic (content area) major	Between Groups	2.864	4	.716	.224	.924
	Within Groups	427.568	134	3.191		
	Total	430.432	138			
Undergraduate degree in education	Between Groups	11.179	4	2.795	1.152	.335
	Within Groups	329.857	136	2.425		
	Total	341.035	140			
<b>Undergraduate degree with an academic major and advanced degree with an academic major</b>	Between Groups	31.558	4	7.890	<b>3.094</b>	<b>.018</b>
	Within Groups	336.573	132	2.550		
	Total	368.131	136			
Undergraduate degree with an academic major and advanced degree in education	Between Groups	5.866	4	1.466	.882	.476
	Within Groups	229.379	138	1.662		
	Total	235.245	142			
Undergraduate degree in education and advanced degree in education	Between Groups	22.566	4	5.642	2.045	.092
	Within Groups	366.890	133	2.759		
	Total	389.457	137			
Undergraduate degree in education and advanced degree with an academic major	Between Groups	4.198	4	1.050	.481	.750
	Within Groups	305.430	140	2.182		
	Total	309.628	144			

**Table E.6 – Post Hoc Results for Differences in Means Between Degree Combinations Preferred and School Size**

Degree Combination	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Undergraduate degree with an academic major and advanced degree with an academic major	Lower School Only	Lower and Middle Schools	-1.833	.967	.325
		Lower, Middle and Upper Schools	-.895	.672	.672
		Middle and Upper Schools	.343	.758	.991
		Upper School Only	-.652	.810	.929
	Lower and Middle Schools	Lower School Only	1.833	.967	.325
		Lower, Middle and Upper Schools	.939	.732	.703
		Middle and Upper Schools	2.176	.812	.063
		Upper School Only	1.182	.861	.646
	Lower, Middle and Upper Schools	Lower School Only	.895	.672	.672
		Lower and Middle Schools	-.939	.732	.703
		Middle and Upper Schools	1.238*	.420	.030
		Upper School Only	.243	.508	.989
	Middle and Upper Schools	Lower School Only	-.343	.758	.991
		Lower and Middle Schools	-2.176	.812	.063
		Lower, Middle and Upper Schools	-1.238*	.420	.030
		Upper School Only	-.995	.618	.494
Upper School Only	Lower School Only	.652	.810	.929	
	Lower and Middle Schools	-1.182	.861	.646	
	Lower, Middle and Upper Schools	-.243	.508	.989	
	Middle and Upper Schools	.995	.618	.494	

\*p<.05

## Appendix E - Data Tables

**Table E.7: ANOVA Results for Relationships Between Degree Combination Preference and Head of School Years of Teaching Experience**

		Sum of Squares	df	Mean Square	F	Sig.
Undergraduate degree with an academic (content area) major	Between Groups	27.073	4	6.768	2.256	.067
	Within Groups	363.062	121	3.001		
	Total	390.135	125			
Undergraduate degree in education	Between Groups	14.516	4	3.629	1.511	.203
	Within Groups	295.484	123	2.402		
	Total	310.000	127			
Undergraduate degree with an academic major and advanced degree with an academic major	Between Groups	6.423	4	1.606	.575	.682
	Within Groups	338.188	121	2.795		
	Total	344.611	125			
Undergraduate degree with an academic major and advanced degree in education	Between Groups	13.233	4	3.308	1.943	.107
	Within Groups	211.155	124	1.703		
	Total	224.388	128			
Undergraduate degree in education and advanced degree in education	Between Groups	11.163	4	2.791	.960	.432
	Within Groups	351.694	121	2.907		
	Total	362.857	125			
<b>Undergraduate degree in education and advanced degree with an academic major</b>	Between Groups	26.048	4	6.512	<b>3.177</b>	<b>.016</b>
	Within Groups	262.343	128	2.050		
	Total	288.391	132			

**Table E.8 – Post Hoc Results for Differences in Means Between Preferred Degree Combination and Head of School Years of Teaching Experience**

Degree Combination	(I) Categories of years teaching	(J) Categories of years teaching	Mean Difference (I-J)	Std. Error	Sig.
Undergraduate degree in education and advanced degree with an academic major	No experience	0 - 6 years	1.271	.601	.220
		7 - 11 years	1.330	.603	.184
		12 - 19 years	1.674*	.588	.040
		20+ years	.714	.605	.762
	0 - 6 years	No experience	-1.271	.601	.220
		7 - 11 years	.059	.373	1.000
		12 - 19 years	.403	.348	.775
		20+ years	-.557	.376	.577
	7 - 11 years	No experience	-1.330	.603	.184
		0 - 6 years	-.059	.373	1.000
		12 - 19 years	.344	.351	.864
		20+ years	-.616	.379	.485
	12 - 19 years	No experience	-1.674*	.588	.040
		0 - 6 years	-.403	.348	.775
		7 - 11 years	-.344	.351	.864
		20+ years	-.960	.355	.059
	20+ years	No experience	-.714	.605	.762
		0 - 6 years	.557	.376	.577
		7 - 11 years	.616	.379	.485
		12 - 19 years	.960	.355	.059

\*p < .05

**Table E.9: ANOVA Results for Relationships Between Importance of Teacher Certification and School Size**

Certification Status		Sum of Squares	df	Mean Square	F	Sig.
<b>Hold a current teaching certificate</b>	Between Groups	17.107	4	4.277	<b>3.408</b>	<b>.011</b>
	Within Groups	195.738	156	1.255		
	Total	212.845	160			
<b>Held a teaching certificate at some point</b>	Between Groups	12.260	4	3.065	<b>2.819</b>	<b>.027</b>
	Within Groups	154.407	142	1.087		
	Total	166.667	146			

**Table E.10 – Post Hoc Results for Differences in Means Between Importance of Teacher Certification and School Size**

Certification Status	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Hold a current teaching certificate	Under 201	201 - 300	.078	.305	.999
		301 - 500	-.484	.262	.352
		501 - 700	-.240	.321	.945
		Over 700	.397	.242	.473
	201 - 300	Under 201	-.078	.305	.999
		301 - 500	-.562	.309	.367
		501 - 700	-.317	.360	.903
		Over 700	.320	.292	.809
	301 - 500	Under 201	.484	.262	.352
		201 - 300	.562	.309	.367
		501 - 700	.244	.325	.944
		Over 700	.882**	.248	.004
	501 - 700	Under 201	.240	.321	.945
		201 - 300	.317	.360	.903
		301 - 500	-.244	.325	.944
		Over 700	.637	.309	.241
Over 700	Under 201	-.397	.242	.473	
	201 - 300	-.320	.292	.809	
	301 - 500	-.882**	.248	.004	
	501 - 700	-.637	.309	.241	
Held a teaching certificate at some point	Under 201	201 - 300	-.135	.296	.991
		301 - 500	-.181	.253	.953
		501 - 700	.069	.313	.999
		Over 700	.535	.234	.156
	201 - 300	Under 201	.135	.296	.991
		301 - 500	-.046	.302	1.000
		501 - 700	.204	.354	.978
		Over 700	.670	.286	.138
	301 - 500	Under 201	.181	.253	.953
		201 - 300	.046	.302	1.000
		501 - 700	.250	.319	.935
		Over 700	.716*	.242	.030



## Appendix E - Data Tables

501 - 700	Under 201	-.069	.313	.999
	201 - 300	-.204	.354	.978
	301 - 500	-.250	.319	.935
	Over 700	.466	.304	.545
Over 700	Under 201	-.535	.234	.156
	201 - 300	-.670	.286	.138
	301 - 500	-.716*	.242	.030
	501 - 700	-.466	.304	.545

\*p<.05, \*\*p<.01

**Table E.11: ANOVA Results for Relationships Between Importance of Teacher Certification and School Location**

Certification Status		Sum of Squares	df	Mean Square	F	Sig.
<b>Hold a current teaching certificate</b>	Between Groups	9.238	2	4.619	<b>3.647</b>	<b>.028</b>
	Within Groups	184.937	146	1.267		
	Total	194.174	148			
Held a teaching certificate at some point	Between Groups	3.357	2	1.679	1.472	.233
	Within Groups	151.672	133	1.140		
	Total	155.029	135			

**Table E.12 – Post Hoc Results for Differences in Means Between Importance of Teacher Certification and School Location**

Certification Status	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Hold a current teaching certificate	Rural	Suburban	.766*	.288	.023
		Urban	.544	.336	.239
	Suburban	Rural	-.766*	.288	.023
		Urban	-.222	.234	.611
	Urban	Rural	-.544	.336	.239
		Suburban	.222	.234	.611

\*p<.05

**Table E.13: ANOVA Results for Relationships Between Importance of Teacher Certification and Head of School Academic Background**

Certification Status		Sum of Squares	df	Mean Square	F	Sig.
Hold a current teaching certificate	Between Groups	3.929	3	1.310	.993	.398
	Within Groups	191.292	145	1.319		
	Total	195.221	148			
<b>Held a teaching certificate at some point</b>	Between Groups	10.531	3	3.510	<b>3.147</b>	<b>.027</b>
	Within Groups	147.234	132	1.115		
	Total	157.765	135			

\*p<.05

## Appendix E - Data Tables

**Table E.14 – Post Hoc Results for Differences in Means Between Importance of Teacher Certification and Head of School Academic Background**

Certification Status	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
Held a teaching certificate at some point	Bachelors degree plus additional coursework	Masters degree	1.127	.523	.142
		Masters degree plus additional coursework	.984	.487	.186
		Doctoral degree	1.431*	.508	.028
	Masters degree	Bachelors degree plus additional coursework	-1.127	.523	.142
		Masters degree plus additional coursework	-.143	.255	.944
		Doctoral degree	.304	.293	.727
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.984	.487	.186
		Masters degree	.143	.255	.944
		Doctoral degree	.447	.222	.189
	Doctoral degree	Bachelors degree plus additional coursework	-1.431*	.508	.028
		Masters degree	-.304	.293	.727
		Masters degree plus additional coursework	-.447	.222	.189

\*p<.05

## Appendix E - Data Tables

**Table E.15: ANOVA Results for Relationships Between Content and Pedagogical Knowledge Characteristics and School Location**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	.294	2	.147	1.343	.264
	Within Groups	15.988	146	.110		
	Total	16.282	148			
<b>Demonstrate knowledge of pedagogy and teaching strategies</b>	Between Groups	1.721	2	.860	<b>3.003</b>	<b>.053</b>
	Within Groups	41.823	146	.286		
	Total	43.544	148			
Demonstrate knowledge of how students learn and child development	Between Groups	1.030	2	.515	1.590	.208
	Within Groups	46.990	145	.324		
	Total	48.020	147			
Demonstrate knowledge of teaching resources	Between Groups	1.997	2	.998	1.996	.140
	Within Groups	72.510	145	.500		
	Total	74.507	147			
Design instruction that meets a variety of student learning styles	Between Groups	.689	2	.344	.761	.469
	Within Groups	66.076	146	.453		
	Total	66.765	148			
Design instruction that is engaging to students	Between Groups	.240	2	.120	.693	.502
	Within Groups	25.078	145	.173		
	Total	25.318	147			
Importance - Differentiate instruction to meet a variety of student abilities and needs	Between Groups	.363	2	.181	.396	.674
	Within Groups	66.872	146	.458		
	Total	67.235	148			
Importance - Assess student learning in a variety of ways	Between Groups	.080	2	.040	.092	.912
	Within Groups	62.914	145	.434		
	Total	62.993	147			
Importance - Integrate technology in instruction	Between Groups	.476	2	.238	.500	.608
	Within Groups	68.134	143	.476		
	Total	68.610	145			

**Table E.16 – Post Hoc Results for Differences in Means Between Importance of Content and Pedagogical Knowledge Characteristics and School Location**

CPK Characteristic	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Demonstrate knowledge of pedagogy and teaching strategies	Rural	Suburban	.073	.137	.857
		Urban	-.200	.160	.424
	Suburban	Rural	-.073	.137	.857
		Urban	-.273*	.111	.041
	Urban	Rural	.200	.160	.424
		Suburban	.273*	.111	.041

\*p<.05

**Table E.17: ANOVA Results for Relationships Between Importance of Content and Pedagogical Knowledge Characteristics and Head of School Academic Background**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	.145	3	.048	.435	.729
	Within Groups	16.137	145	.111		
	Total	16.282	148			
<b>Demonstrate knowledge of pedagogy and teaching strategies</b>	Between Groups	2.212	3	.737	<b>2.587</b>	<b>.055</b>
	Within Groups	41.331	145	.285		
	Total	43.544	148			
Demonstrate knowledge of how students learn and child development	Between Groups	1.380	3	.460	1.420	.239
	Within Groups	46.640	144	.324		
	Total	48.020	147			
Demonstrate knowledge of teaching resources	Between Groups	.823	3	.274	.536	.658
	Within Groups	73.684	144	.512		
	Total	74.507	147			
Design instruction that meets a variety of student learning styles	Between Groups	2.248	3	.749	1.684	.173
	Within Groups	64.517	145	.445		
	Total	66.765	148			
Design instruction that is engaging to students	Between Groups	.323	3	.108	.620	.603
	Within Groups	24.995	144	.174		
	Total	25.318	147			
<b>Differentiate instruction to meet a variety of student abilities and needs</b>	Between Groups	4.944	3	1.648	<b>3.838</b>	<b>.011</b>
	Within Groups	62.264	145	.429		
	Total	67.208	148			
Assess student learning in a variety of ways	Between Groups	1.910	3	.637	1.501	.217
	Within Groups	61.083	144	.424		
	Total	62.993	147			
Integrate technology in instruction	Between Groups	1.338	3	.446	.942	.422
	Within Groups	67.271	142	.474		
	Total	68.610	145			

## Appendix E - Data Tables

**Table E.18 – Post Hoc Results for Differences in Means Between Importance of Content and Pedagogical Knowledge Characteristics and Head of School Academic Background**

CPK Characteristic	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
Demonstrate knowledge of pedagogy and teaching strategies	Bachelors degree plus additional coursework	Masters degree	-.250	.244	.735
		Masters degree plus additional coursework	.031	.226	.999
		Doctoral degree	.137	.236	.938
	Masters degree	Bachelors degree plus additional coursework	.250	.244	.735
		Masters degree plus additional coursework	.281	.123	.107
		Doctoral degree	.387*	.142	.036
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.031	.226	.999
		Masters degree	-.281	.123	.107
		Doctoral degree	.106	.108	.763
	Doctoral degree	Bachelors degree plus additional coursework	-.137	.236	.938
		Masters degree	-.387*	.142	.036
		Masters degree plus additional coursework	-.106	.108	.763
Differentiate instruction to meet a variety of student abilities and needs	Bachelors degree plus additional coursework	Masters degree	.208	.299	.898
		Masters degree plus additional coursework	.506	.277	.265
		Doctoral degree	.706	.290	.075
	Masters degree	Bachelors degree plus additional coursework	-.208	.299	.898
		Masters degree plus additional coursework	.298	.151	.206
		Doctoral degree	.498*	.175	.026
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.506	.277	.265
		Masters degree	-.298	.151	.206
		Doctoral degree	.200	.133	.438
	Doctoral degree	Bachelors degree plus additional coursework	-.706	.290	.075
		Masters degree	-.498*	.175	.026
		Masters degree plus additional coursework	-.200	.133	.438

\*p<.05

**Table E.19: ANOVA Results for Relationships Between Importance of Content and Pedagogical Knowledge Characteristics and School Type**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	.252	4	.063	.613	.654
	Within Groups	16.167	157	.103		
	Total	16.420	161			
Demonstrate knowledge of pedagogy and teaching strategies	Between Groups	1.759	4	.440	1.463	.216
	Within Groups	47.186	157	.301		
	Total	48.944	161			
<b>Demonstrate knowledge of how students learn and child development</b>	Between Groups	3.935	4	.984	<b>3.103</b>	<b>.017</b>
	Within Groups	49.444	156	.317		
	Total	53.379	160			
Demonstrate knowledge of teaching resources	Between Groups	1.691	4	.423	.819	.515
	Within Groups	80.545	156	.516		
	Total	82.236	160			
Design instruction that meets a variety of student learning styles	Between Groups	3.925	4	.981	2.267	.064
	Within Groups	67.958	157	.433		
	Total	71.883	161			
Design instruction that is engaging to students	Between Groups	.504	4	.126	.675	.611
	Within Groups	29.136	156	.187		
	Total	29.640	160			
Differentiate instruction to meet a variety of student abilities and needs	Between Groups	3.316	4	.829	1.881	.116
	Within Groups	69.178	157	.441		
	Total	72.494	161			
Assess student learning in a variety of ways	Between Groups	2.155	4	.539	1.312	.268
	Within Groups	64.093	156	.411		
	Total	66.248	160			
Integrate technology in instruction	Between Groups	1.733	4	.433	.865	.486
	Within Groups	76.603	153	.501		
	Total	78.335	157			



## Appendix E - Data Tables

**Table E.20: ANOVA Results for Relationships Between Importance of Classroom Environment Characteristics and School Type**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
<b>Create an environment of respect and rapport in the classroom</b>	Between Groups	1.026	4	.256	<b>4.224</b>	<b>.003</b>
	Within Groups	9.471	156	.061		
	Total	10.497	160			
Establish a culture for learning in the classroom	Between Groups	.473	4	.118	1.368	.247
	Within Groups	13.478	156	.086		
	Total	13.950	160			
Manage classroom procedures	Between Groups	.693	4	.173	.570	.685
	Within Groups	47.431	156	.304		
	Total	48.124	160			
Maintain order and discipline in the classroom	Between Groups	.774	4	.194	.640	.635
	Within Groups	46.584	154	.302		
	Total	47.358	158			
Manage student behavior	Between Groups	.786	4	.197	.819	.515
	Within Groups	37.208	155	.240		
	Total	37.994	159			
Organize physical space for an optimal learning environment	Between Groups	4.602	4	1.151	2.312	.060
	Within Groups	77.634	156	.498		
	Total	82.236	160			
\Use a variety of questioning and discussion techniques	Between Groups	.980	4	.245	.826	.510
	Within Groups	45.963	155	.297		
	Total	46.944	159			
Provide meaningful feedback to students	Between Groups	1.606	4	.401	2.187	.073
	Within Groups	28.630	156	.184		
	Total	30.236	160			
Demonstrate flexibility and responsiveness	Between Groups	1.453	4	.363	1.300	.272
	Within Groups	43.291	155	.279		
	Total	44.744	159			
Demonstrate a positive attitude and enthusiasm for teaching	Between Groups	.107	4	.027	.448	.774
	Within Groups	9.272	156	.059		
	Total	9.379	160			

## Appendix E - Data Tables

**Table E.21 – Post Hoc Results for Differences in Means Between Importance of Classroom Environment Characteristics and School Type**

CE Characteristic	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Importance - Create an environment of respect and rapport in the classroom	Lower School Only	Lower and Middle Schools	.000	.130	1.000
		Lower, Middle and Upper Schools	.034	.103	.997
		Middle and Upper Schools	.059	.117	.987
		Upper School Only	.333	.123	.058
	Lower and Middle Schools	Lower School Only	.000	.130	1.000
		Lower, Middle and Upper Schools	.034	.085	.994
		Middle and Upper Schools	.059	.102	.978
		Upper School Only	.333*	.109	.021
	Lower, Middle and Upper Schools	Lower School Only	-.034	.103	.997
		Lower and Middle Schools	-.034	.085	.994
		Middle and Upper Schools	.025	.064	.995
		Upper School Only	.299**	.075	.001
	Middle and Upper Schools	Lower School Only	-.059	.117	.987
		Lower and Middle Schools	-.059	.102	.978
		Lower, Middle and Upper Schools	-.025	.064	.995
		Upper School Only	.275*	.093	.029
Upper School Only	Lower School Only	-.333	.123	.058	
	Lower and Middle Schools	-.333*	.109	.021	
	Lower, Middle and Upper Schools	-.299**	.075	.001	
	Middle and Upper Schools	-.275*	.093	.029	

\*p<.05, \*\*p<.01

## Appendix E - Data Tables

**Table E.22: ANOVA Results for Relationships Between Importance of Classroom Environment Characteristics and School Size**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Create an environment of respect and rapport in the classroom	Between Groups	.251	4	.063	.954	.435
	Within Groups	10.246	156	.066		
	Total	10.497	160			
Establish a culture for learning in the classroom	Between Groups	.043	4	.011	.122	.975
	Within Groups	13.907	156	.089		
	Total	13.950	160			
Manage classroom procedures	Between Groups	.314	4	.078	.256	.906
	Within Groups	47.811	156	.306		
	Total	48.124	160			
Maintain order and discipline in the classroom	Between Groups	.577	4	.144	.475	.754
	Within Groups	46.782	154	.304		
	Total	47.358	158			
Manage student behavior	Between Groups	.481	4	.120	.497	.738
	Within Groups	37.513	155	.242		
	Total	37.994	159			
Organize physical space for an optimal learning environment	Between Groups	1.932	4	.483	.938	.443
	Within Groups	80.304	156	.515		
	Total	82.236	160			
Use a variety of questioning and discussion techniques	Between Groups	1.073	4	.268	.907	.462
	Within Groups	45.870	155	.296		
	Total	46.944	159			
Provide meaningful feedback to students	Between Groups	1.236	4	.309	1.662	.162
	Within Groups	29.000	156	.186		
	Total	30.236	160			
Demonstrate flexibility and responsiveness	Between Groups	.488	4	.122	.427	.789

	Within Groups	44.256	155	.286		
	Total	44.744	159			
	Between Groups	1.370	4	.343	<b>6.673</b>	<b>.000</b>
<b>Demonstrate a positive attitude and enthusiasm for teaching</b>	Within Groups	8.009	156	.051		
	Total	9.379	160			

**Table E.23 – Post Hoc Results for Differences in Means Between Importance of Classroom Environment Characteristics and School Size**

CE Characteristic	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Demonstrate a positive attitude and enthusiasm for teaching	Under 201	201 - 300	.286*	.062	.000
		301 - 500	.086	.053	.497
		501 - 700	.000	.065	1.000
		Over 700	.020	.049	.994
	201 - 300	Under 201	-.286**	.062	.000
		301 - 500	-.200*	.063	.014
		501 - 700	-.286**	.073	.001
		Over 700	-.266**	.059	.000
	301 - 500	Under 201	-.086	.053	.497
		201 - 300	.200*	.063	.014
		501 - 700	-.086	.066	.689
		Over 700	-.066	.050	.682
	501 - 700	Under 201	.000	.065	1.000
		201 - 300	.286**	.073	.001
		301 - 500	.086	.066	.689
		Over 700	.020	.062	.998
Over 700	Under 201	-.020	.049	.994	
	201 - 300	.266**	.059	.000	
	301 - 500	.066	.050	.682	
	501 - 700	-.020	.062	.998	

\*p<.05, \*\*p<.01

## Appendix E - Data Tables

**Table E.24: ANOVA Results for Relationships Between Importance of Classroom Environment Characteristics and Head of School Academic Background**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Create an environment of respect and rapport in the classroom	Between Groups	.065	3	.022	.547	.651
	Within Groups	5.692	144	.040		
	Total	5.757	147			
Establish a culture for learning in the classroom	Between Groups	.218	3	.073	1.049	.373
	Within Groups	9.965	144	.069		
	Total	10.182	147			
Manage classroom procedures	Between Groups	1.823	3	.608	2.030	.112
	Within Groups	43.116	144	.299		
	Total	44.939	147			
Maintain order and discipline in the classroom	Between Groups	1.426	3	.475	1.662	.178
	Within Groups	40.602	142	.286		
	Total	42.027	145			
Manage student behavior	Between Groups	1.816	3	.605	2.562	.057
	Within Groups	33.790	143	.236		
	Total	35.605	146			
<b>Organize physical space for an optimal learning environment</b>	Between Groups	5.217	3	1.739	<b>3.473</b>	<b>.018</b>
	Within Groups	72.101	144	.501		
	Total	77.318	147			
<b>Use a variety of questioning and discussion techniques</b>	Between Groups	2.299	3	.766	<b>2.620</b>	<b>.053</b>
	Within Groups	41.837	143	.293		
	Total	44.136	146			
Provide meaningful feedback to students	Between Groups	1.193	3	.398	2.096	.103
	Within Groups	27.314	144	.190		
	Total	28.507	147			
Demonstrate flexibility and responsiveness	Between Groups	1.310	3	.437	1.601	.192
	Within Groups	39.016	143	.273		
	Total	40.327	146			
Demonstrate a positive attitude and enthusiasm for teaching	Between Groups	.292	3	.097	1.550	.204
	Within Groups	9.033	144	.063		
	Total	9.324	147			

**Table E.25 – Post Hoc Results for Differences in Means Between Importance of Classroom Environment Characteristics and Head of School Academic Background**

CE Characteristic	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
Organize physical space for an optimal learning environment	Bachelors degree plus additional coursework	Masters degree	-.083	.323	.994
		Masters degree plus additional coursework	.405	.299	.530
		Doctoral degree	.382	.313	.615
	Masters degree	Bachelors degree plus additional coursework	.083	.323	.994
		Masters degree plus additional coursework	.488*	.164	.018
		Doctoral degree	.466	.189	.069
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.405	.299	.530
		Masters degree	-.488*	.164	.018
		Doctoral degree	-.022	.144	.999
	Doctoral degree	Bachelors degree plus additional coursework	-.382	.313	.615
		Masters degree	-.466	.189	.069
		Masters degree plus additional coursework	.022	.144	.999
Use a variety of questioning and discussion techniques	Bachelors degree plus additional coursework	Masters degree	-.167	.247	.906
		Masters degree plus additional coursework	.179	.229	.863
		Doctoral degree	.121	.240	.958
	Masters degree	Bachelors degree plus additional coursework	.167	.247	.906
		Masters degree plus additional coursework	.345*	.125	.033
		Doctoral degree	.288	.145	.199
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.179	.229	.863
		Masters degree	-.345*	.125	.033
		Doctoral degree	-.057	.111	.955
	Doctoral degree	Bachelors degree plus additional coursework	-.121	.240	.958
		Masters degree	-.288	.145	.199
		Masters degree plus additional coursework	.057	.111	.955

\*p<.05



## Appendix E - Data Tables

**Table E.26: ANOVA Results for Relationships Between Importance of Communication, Community, and Growth Characteristics and School Type**

CCG Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Communicate clearly and accurately with students	Between Groups	.160	4	.040	.683	.605
	Within Groups	9.222	157	.059		
	Total	9.383	161			
Communicate clearly and accurately with colleagues	Between Groups	1.046	4	.262	1.008	.405
	Within Groups	40.732	157	.259		
	Total	41.778	161			
Communicate clearly and accurately with parents	Between Groups	.028	4	.007	.058	.994
	Within Groups	18.984	157	.121		
	Total	19.012	161			
Communicate clearly and accurately with administrators	Between Groups	1.247	4	.312	1.120	.349
	Within Groups	43.697	157	.278		
	Total	44.944	161			
Have professional interactions with parents	Between Groups	1.297	4	.324	1.626	.170
	Within Groups	31.113	156	.199		
	Total	32.410	160			
<b>Work well with colleagues</b>	Between Groups	2.952	4	.738	<b>2.633</b>	<b>.036</b>
	Within Groups	43.993	157	.280		
	Total	46.944	161			
Contribute to the overall school community	Between Groups	2.240	4	.560	1.602	.176
	Within Groups	54.871	157	.349		
	Total	57.111	161			
Grow and develop professionally	Between Groups	1.676	4	.419	1.351	.254
	Within Groups	48.411	156	.310		
	Total	50.087	160			
Show professionalism	Between Groups	.721	4	.180	1.684	.156
	Within Groups	16.810	157	.107		
	Total	17.531	161			

**Table E.27 – Post Hoc Results for Differences in Means Between Importance of Communication, Community, and Growth Characteristics and School Type**

CCG Characteristic	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Work well with colleagues	Lower School Only	Lower and Middle Schools	-.111	.279	.995
		Lower, Middle and Upper Schools	-.037	.222	1.000
		Middle and Upper Schools	.196	.251	.936
		Upper School Only	.417	.265	.516
	Lower and Middle Schools	Lower School Only	.111	.279	.995
		Lower, Middle and Upper Schools	.074	.183	.994
		Middle and Upper Schools	.307	.218	.624
		Upper School Only	.528	.233	.163
	Lower, Middle and Upper Schools	Lower School Only	.037	.222	1.000
		Lower and Middle Schools	-.074	.183	.994
		Middle and Upper Schools	.233	.137	.440
		Upper School Only	.453*	.160	.042
	Middle and Upper Schools	Lower School Only	-.196	.251	.936
		Lower and Middle Schools	-.307	.218	.624
		Lower, Middle and Upper Schools	-.233	.137	.440
		Upper School Only	.221	.200	.804
Upper School Only	Lower School Only	-.417	.265	.516	
	Lower and Middle Schools	-.528	.233	.163	
	Lower, Middle and Upper Schools	-.453*	.160	.042	
	Middle and Upper Schools	-.221	.200	.804	

\*p<.05

## Appendix E - Data Tables

**Table E.28: ANOVA Results for Relationships Between Importance of Communication, Community, and Growth Characteristics and Head of School Academic Background**

CCG Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Communicate clearly and accurately with students	Between Groups	.311	3	.104	1.668	.176
	Within Groups	9.018	145	.062		
	Total	9.329	148			
Communicate clearly and accurately with colleagues	Between Groups	1.399	3	.466	1.788	.152
	Within Groups	37.796	145	.261		
	Total	39.195	148			
Communicate clearly and accurately with parents	Between Groups	.301	3	.100	.788	.503
	Within Groups	18.451	145	.127		
	Total	18.752	148			
Communicate clearly and accurately with administrators	Between Groups	1.812	3	.604	2.157	.096
	Within Groups	40.617	145	.280		
	Total	42.430	148			
Have professional interactions with parents	Between Groups	.986	3	.329	1.569	.200
	Within Groups	30.370	145	.209		
	Total	31.356	148			
<b>Work well with colleagues</b>	Between Groups	2.307	3	.769	<b>2.799</b>	<b>.042</b>
	Within Groups	39.841	145	.275		
	Total	42.148	148			
<b>Contribute to the overall school community</b>	Between Groups	4.086	3	1.362	<b>4.104</b>	<b>.008</b>
	Within Groups	48.116	145	.332		
	Total	52.201	148			
Grow and develop professionally	Between Groups	1.137	3	.379	1.300	.277
	Within Groups	42.273	145	.292		
	Total	43.409	148			
Show professionalism	Between Groups	.678	3	.226	2.279	.082
	Within Groups	14.382	145	.099		
	Total	15.060	148			

## Appendix E - Data Tables

**Table E.29 – Post Hoc Results for Differences in Means Between Importance of Communication, Community, and Growth Characteristics and Head of School Academic Background**

CCG Characteristic	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
Work well with colleagues	Bachelors degree plus additional coursework	Masters degree	-.208	.239	.820
		Masters degree plus additional coursework	.020	.221	1.000
		Doctoral degree	.196	.232	.833
	Masters degree	Bachelors degree plus additional coursework	.208	.239	.820
		Masters degree plus additional coursework	.228	.121	.241
		Doctoral degree	.404*	.140	.023
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.020	.221	1.000
		Masters degree	-.228	.121	.241
		Doctoral degree	.176	.106	.349
	Doctoral degree	Bachelors degree plus additional coursework	-.196	.232	.833
		Masters degree	-.404*	.140	.023
		Masters degree plus additional coursework	-.176	.106	.349
Contribute to the overall school community	Bachelors degree plus additional coursework	Masters degree	-.417	.263	.391
		Masters degree plus additional coursework	-.076	.243	.989
		Doctoral degree	.118	.255	.967
	Masters degree	Bachelors degree plus additional coursework	.417	.263	.391
		Masters degree plus additional coursework	.340	.133	.056
		Doctoral degree	.534**	.154	.004
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	.076	.243	.989
		Masters degree	-.340	.133	.056
		Doctoral degree	.194	.117	.348
	Doctoral degree	Bachelors degree plus additional coursework	-.118	.255	.967
		Masters degree	-.534**	.154	.004
		Masters degree plus additional coursework	-.194	.117	.348

\*p<.05, \*\*p<.01

## Appendix E - Data Tables

**Table E.30: ANOVA Results for Relationships Between Importance of Communication, Community, and Growth Characteristics and School Type**

CCG Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Communicate clearly and accurately with students	Between Groups	.475	4	.119	2.091	.085
	Within Groups	8.908	157	.057		
	Total	9.383	161			
Communicate clearly and accurately with colleagues	Between Groups	1.809	4	.452	1.777	.136
	Within Groups	39.968	157	.255		
	Total	41.778	161			
Communicate clearly and accurately with parents	Between Groups	.165	4	.041	.343	.848
	Within Groups	18.848	157	.120		
	Total	19.012	161			
Communicate clearly and accurately with administrators	Between Groups	.953	4	.238	.850	.495
	Within Groups	43.991	157	.280		
	Total	44.944	161			
Have professional interactions with parents	Between Groups	1.688	4	.422	2.143	.078
	Within Groups	30.721	156	.197		
	Total	32.410	160			
Work well with colleagues	Between Groups	.472	4	.118	.399	.809
	Within Groups	46.472	157	.296		
	Total	46.944	161			
Contribute to the overall school community	Between Groups	2.651	4	.663	1.911	.111
	Within Groups	54.460	157	.347		
	Total	57.111	161			
<b>Grow and develop professionally</b>	Between Groups	3.508	4	.877	<b>2.937</b>	<b>.022</b>
	Within Groups	46.579	156	.299		
	Total	50.087	160			
Show professionalism	Between Groups	.494	4	.123	1.137	.341
	Within Groups	17.037	157	.109		
	Total	17.531	161			

**Table E.31: ANOVA Results for Relationships Between Content and Pedagogical Knowledge Performance and School Type**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	1.011	4	.253	1.031	.393
	Within Groups	37.294	152	.245		
	Total	38.306	156			
Demonstrate knowledge of pedagogy and teaching strategies	Between Groups	2.625	4	.656	1.634	.169
	Within Groups	61.069	152	.402		
	Total	63.694	156			
<b>Demonstrate knowledge of how students learn and child development</b>	Between Groups	4.725	4	1.181	<b>2.669</b>	<b>.034</b>
	Within Groups	67.275	152	.443		
	Total	72.000	156			
Demonstrate knowledge of teaching resources	Between Groups	2.152	4	.538	1.616	.173
	Within Groups	50.599	152	.333		
	Total	52.752	156			
<b>Design instruction that meets a variety of student learning styles</b>	Between Groups	5.523	4	1.381	<b>2.764</b>	<b>.030</b>
	Within Groups	75.929	152	.500		
	Total	81.452	156			
Design instruction that is engaging to students	Between Groups	2.034	4	.508	1.368	.248
	Within Groups	56.489	152	.372		
	Total	58.522	156			
Differentiate instruction to meet a variety of student abilities and needs	Between Groups	4.961	4	1.240	1.957	.104
	Within Groups	96.351	152	.634		
	Total	101.312	156			
Assess student learning in a variety of ways	Between Groups	2.917	4	.729	1.144	.338
	Within Groups	96.230	151	.637		
	Total	99.147	155			
Integrate technology in instruction	Between Groups	1.845	4	.461	.672	.612
	Within Groups	104.232	152	.686		
	Total	106.076	156			

## Appendix E - Data Tables

**Table E.32 – Post Hoc Results for Differences in Means Between Content and Pedagogical Knowledge Performance and School Type**

CPK Characteristic	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Demonstrate knowledge of how students learn and child development	Lower School Only	Lower and Middle Schools	.389	.351	.802
		Lower, Middle and Upper Schools	.465	.279	.457
		Middle and Upper Schools	.912*	.316	.036
		Upper School Only	.591	.338	.407
	Lower and Middle Schools	Lower School Only	-.389	.351	.802
		Lower, Middle and Upper Schools	.076	.230	.997
		Middle and Upper Schools	.523	.274	.318
		Upper School Only	.202	.299	.961
	Lower, Middle and Upper Schools	Lower School Only	-.465	.279	.457
		Lower and Middle Schools	-.076	.230	.997
		Middle and Upper Schools	.447	.173	.079
		Upper School Only	.126	.210	.975
	Middle and Upper Schools	Lower School Only	-.912*	.316	.036
		Lower and Middle Schools	-.523	.274	.318
		Lower, Middle and Upper Schools	-.447	.173	.079
		Upper School Only	-.321	.257	.724
Upper School Only	Lower School Only	-.591	.338	.407	
	Lower and Middle Schools	-.202	.299	.961	
	Lower, Middle and Upper Schools	-.126	.210	.975	
	Middle and Upper Schools	.321	.257	.724	
Design instruction that meets a variety of student learning styles	Lower School Only	Lower and Middle Schools	.611	.373	.474
		Lower, Middle and Upper Schools	.588	.296	.278
		Middle and Upper Schools	1.029*	.336	.021
		Upper School Only	.773	.359	.203
	Lower and Middle Schools	Lower School Only	-.611	.373	.474
		Lower, Middle and Upper Schools	-.023	.245	1.000
		Middle and Upper Schools	.418	.291	.606



## Appendix E - Data Tables

Lower, Middle and Upper Schools	Lower School Only	-.588	.296	.278
	Lower and Middle Schools	.023	.245	1.000
	Middle and Upper Schools	.442	.184	.120
	Upper School Only	.185	.223	.921
Middle and Upper Schools	Lower School Only	-1.029*	.336	.021
	Lower and Middle Schools	-.418	.291	.606
	Lower, Middle and Upper Schools	-.442	.184	.120
	Upper School Only	-.257	.273	.881
Upper School Only	Lower School Only	-.773	.359	.203
	Lower and Middle Schools	-.162	.318	.986
	Lower, Middle and Upper Schools	-.185	.223	.921
	Middle and Upper Schools	.257	.273	.881

\*p<.05

## Appendix E - Data Tables

**Table E.33: ANOVA Results for Relationships Between Content and Pedagogical Knowledge Performance and Head of School Academic Background**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	.506	3	.169	.678	.567
	Within Groups	35.791	144	.249		
	Total	36.297	147			
Demonstrate knowledge of pedagogy and teaching strategies	Between Groups	1.835	3	.612	1.514	.213
	Within Groups	58.185	144	.404		
	Total	60.020	147			
<b>Demonstrate knowledge of how students learn and child development</b>	Between Groups	4.085	3	1.362	<b>2.976</b>	<b>.034</b>
	Within Groups	65.888	144	.458		
	Total	69.973	147			
Demonstrate knowledge of teaching resources	Between Groups	1.873	3	.624	1.812	.148
	Within Groups	49.607	144	.344		
	Total	51.480	147			
Design instruction that meets a variety of student learning styles	Between Groups	.536	3	.179	.332	.802
	Within Groups	77.484	144	.538		
	Total	78.020	147			
Design instruction that is engaging to students	Between Groups	1.480	3	.493	1.312	.273
	Within Groups	54.162	144	.376		
	Total	55.642	147			
Differentiate instruction to meet a variety of student abilities and needs	Between Groups	1.042	3	.347	.531	.662
	Within Groups	94.148	144	.654		
	Total	95.189	147			
Assess student learning in a variety of ways	Between Groups	.392	3	.131	.200	.896
	Within Groups	93.404	143	.653		
	Total	93.796	146			
<b>Integrate technology in instruction</b>	Between Groups	6.113	3	2.038	<b>3.225</b>	<b>.024</b>
	Within Groups	90.995	144	.632		
	Total	97.108	147			

**Table E.34: ANOVA Results for Relationships Between Content and Pedagogical Knowledge Performance and School Size**

		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	1.788	4	.447	1.860	.120
	Within Groups	36.518	152	.240		
	Total	38.306	156			
Demonstrate knowledge of pedagogy and teaching strategies	Between Groups	1.104	4	.276	.670	.614
	Within Groups	62.591	152	.412		
	Total	63.694	156			
Demonstrate knowledge of how students learn and child development	Between Groups	2.381	4	.595	1.300	.273
	Within Groups	69.619	152	.458		
	Total	72.000	156			
How well - Demonstrate knowledge of teaching resources	Between Groups	1.632	4	.408	1.213	.307
	Within Groups	51.119	152	.336		
	Total	52.752	156			
How well - Design instruction that meets a variety of student learning styles	Between Groups	.904	4	.226	.426	.789
	Within Groups	80.549	152	.530		
	Total	81.452	156			
How well - Design instruction that is engaging to students	Between Groups	2.903	4	.726	1.984	.100
	Within Groups	55.619	152	.366		
	Total	58.522	156			
How well - Differentiate instruction to meet a variety of student abilities and needs	Between Groups	4.386	4	1.096	1.719	.149
	Within Groups	96.926	152	.638		
	Total	101.312	156			
How well - Assess student learning in a variety of ways	Between Groups	1.256	4	.314	.484	.747
	Within Groups	97.891	151	.648		
	Total	99.147	155			
<b>How well - Integrate technology in instruction</b>	Between Groups	9.132	4	2.283	<b>3.580</b>	<b>.008</b>
	Within Groups	96.944	152	.638		
	Total	106.076	156			

## Appendix E - Data Tables

**Table E.35 – Post Hoc Results for Differences in Means Between Content and Pedagogical Knowledge Performance and School Size**

CPK Characteristic	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Integrate technology in instruction	Under 201	201 - 300	.055	.222	.999
		301 - 500	-.300	.190	.510
		501 - 700	-.428	.230	.341
		Over 700	-.553*	.175	.016
	201 - 300	Under 201	-.055	.222	.999
		301 - 500	-.356	.225	.512
		501 - 700	-.483	.259	.342
		Over 700	-.608*	.213	.038
	301 - 500	Under 201	.300	.190	.510
		201 - 300	.356	.225	.512
		501 - 700	-.127	.233	.982
		Over 700	-.252	.179	.622
	501 - 700	Under 201	.428	.230	.341
		201 - 300	.483	.259	.342
		301 - 500	.127	.233	.982
		Over 700	-.125	.221	.980
Over 700	Under 201	.553*	.175	.016	
	201 - 300	.608*	.213	.038	
	301 - 500	.252	.179	.622	
	501 - 700	.125	.221	.980	

\*p<.05

**Table E.36: ANOVA Results for Relationships Between Content and Pedagogical Knowledge Performance and School Location**

CPK Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Display a mastery of their subject area	Between Groups	.992	2	.496	2.038	.134
	Within Groups	35.305	145	.243		
	Total	36.297	147			
Demonstrate knowledge of pedagogy and teaching strategies	Between Groups	1.482	2	.741	1.858	.160
	Within Groups	57.815	145	.399		
	Total	59.297	147			
Demonstrate knowledge of how students learn and child development	Between Groups	.290	2	.145	.306	.737
	Within Groups	68.649	145	.473		
	Total	68.939	147			
Demonstrate knowledge of teaching resources	Between Groups	1.929	2	.964	2.822	.063
	Within Groups	49.551	145	.342		
	Total	51.480	147			
Design instruction that meets a variety of student learning styles	Between Groups	.565	2	.282	.529	.591
	Within Groups	77.455	145	.534		
	Total	78.020	147			
Design instruction that is engaging to students	Between Groups	.422	2	.211	.555	.575
	Within Groups	55.219	145	.381		
	Total	55.642	147			
Differentiate instruction to meet a variety of student abilities and needs	Between Groups	1.579	2	.789	1.223	.297
	Within Groups	93.610	145	.646		
	Total	95.189	147			
Assess student learning in a variety of ways	Between Groups	.575	2	.288	.444	.642
	Within Groups	93.221	144	.647		
	Total	93.796	146			
<b>Integrate technology in instruction</b>	Between Groups	3.985	2	1.993	<b>3.059</b>	<b>.050</b>
	Within Groups	94.447	145	.651		
	Total	98.432	147			

## Appendix E - Data Tables

**Table E.37 – Post Hoc Results for Differences in Means Between Content and Pedagogical Knowledge Performance and School Location**

CPK Characteristic	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Integrate technology in instruction	Rural	Suburban	-.379	.212	.176
		Urban	-.606*	.245	.038
	Suburban	Rural	.379	.212	.176
		Urban	-.227	.168	.369
	Urban	Rural	.606*	.245	.038
		Suburban	.227	.168	.369

\*p<.05

**Table E.38: ANOVA Results for Relationships Between Classroom Environment Performance and School Type**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Create an environment of respect and rapport in the classroom	Between Groups	1.443	4	.361	1.399	.237
	Within Groups	39.444	153	.258		
	Total	40.886	157			
Establish a culture for learning in the classroom	Between Groups	1.165	4	.291	1.006	.406
	Within Groups	44.285	153	.289		
	Total	45.449	157			
Manage classroom procedures	Between Groups	1.592	4	.398	1.033	.392
	Within Groups	58.946	153	.385		
	Total	60.538	157			
Maintain order and discipline in the classroom	Between Groups	.540	4	.135	.424	.791
	Within Groups	48.650	153	.318		
	Total	49.190	157			
Manage student behavior	Between Groups	.965	4	.241	.802	.525
	Within Groups	46.022	153	.301		
	Total	46.987	157			
<b>Organize physical space for an optimal learning environment</b>	Between Groups	7.363	4	1.841	<b>3.724</b>	<b>.006</b>
	Within Groups	75.630	153	.494		
	Total	82.994	157			
Use a variety of questioning and discussion techniques	Between Groups	2.727	4	.682	1.410	.233
	Within Groups	73.963	153	.483		
	Total	76.690	157			
Provide meaningful feedback to students	Between Groups	3.425	4	.856	1.859	.121
	Within Groups	70.027	152	.461		
	Total	73.452	156			
Demonstrate flexibility and responsiveness	Between Groups	3.845	4	.961	2.151	.077
	Within Groups	68.364	153	.447		
	Total	72.209	157			
Demonstrate a positive attitude and enthusiasm for teaching	Between Groups	.721	4	.180	.543	.704
	Within Groups	50.400	152	.332		
	Total	51.121	156			

**Table E.39 – Post Hoc Results for Differences in Means Between Classroom Environment Performance and School Type**

CE Characteristic	(I) School type	(J) School type	Mean Difference (I-J)	Std. Error	Sig.
Organize physical space for an optimal learning environment	Lower School Only	Lower and Middle Schools	.222	.371	.975
		Lower, Middle and Upper Schools	.667	.294	.162
		Middle and Upper Schools	.961*	.334	.036
		Upper School Only	1.030*	.357	.035
	Lower and Middle Schools	Lower School Only	-.222	.371	.975
		Lower, Middle and Upper Schools	.444	.243	.362
		Middle and Upper Schools	.739	.290	.086
		Upper School Only	.808	.316	.084
	Lower, Middle and Upper Schools	Lower School Only	-.667	.294	.162
		Lower and Middle Schools	-.444	.243	.362
		Middle and Upper Schools	.294	.183	.493
		Upper School Only	.364	.222	.475
	Middle and Upper Schools	Lower School Only	-.961*	.334	.036
		Lower and Middle Schools	-.739	.290	.086
		Lower, Middle and Upper Schools	-.294	.183	.493
		Upper School Only	.070	.272	.999
	Upper School Only	Lower School Only	-1.030*	.357	.035
		Lower and Middle Schools	-.808	.316	.084
		Lower, Middle and Upper Schools	-.364	.222	.475
		Middle and Upper Schools	-.070	.272	.999

\*p<.05



## Appendix E - Data Tables

**Table E.40: ANOVA Results for Relationships Between Classroom Environment Performance and School Location**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Create an environment of respect and rapport in the classroom	Between Groups	.516	2	.258	.964	.384
	Within Groups	39.028	146	.267		
	Total	39.544	148			
Establish a culture for learning in the classroom	Between Groups	.586	2	.293	.993	.373
	Within Groups	43.052	146	.295		
	Total	43.638	148			
Manage classroom procedures	Between Groups	2.050	2	1.025	2.684	.072
	Within Groups	55.749	146	.382		
	Total	57.799	148			
Maintain order and discipline in the classroom	Between Groups	.006	2	.003	.009	.991
	Within Groups	44.961	146	.308		
	Total	44.966	148			
Manage student behavior	Between Groups	.173	2	.087	.285	.753
	Within Groups	44.471	146	.305		
	Total	44.644	148			
Organize physical space for an optimal learning environment	Between Groups	1.651	2	.825	1.603	.205
	Within Groups	75.182	146	.515		
	Total	76.832	148			
Use a variety of questioning and discussion techniques	Between Groups	1.264	2	.632	1.255	.288
	Within Groups	73.568	146	.504		
	Total	74.832	148			
<b>Provide meaningful feedback to students</b>	Between Groups	4.146	2	2.073	<b>4.494</b>	<b>.013</b>
	Within Groups	66.901	145	.461		
	Total	71.047	147			
<b>Demonstrate flexibility and responsiveness</b>	Between Groups	5.079	2	2.539	<b>6.137</b>	<b>.003</b>
	Within Groups	60.411	146	.414		
	Total	65.490	148			
Demonstrate a positive attitude and enthusiasm for teaching	Between Groups	.515	2	.258	.771	.464
	Within Groups	48.478	145	.334		
	Total	48.993	147			

## Appendix E - Data Tables

**Table E.41 – Post Hoc Results for Differences in Means Between Classroom Environment Performance and School Location**

CE Characteristic	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Provide meaningful feedback to students	Rural	Suburban	-.246	.174	.336
		Urban	-.580*	.204	.014
	Suburban	Rural	.246	.174	.336
		Urban	-.335	.143	.054
	Urban	Rural	.580*	.204	.014
		Suburban	.335	.143	.054
Demonstrate flexibility and responsiveness	Rural	Suburban	.056	.165	.939
		Urban	-.411	.192	.085
	Suburban	Rural	-.056	.165	.939
		Urban	-.467*	.134	.002
	Urban	Rural	.411	.192	.085
		Suburban	.467*	.134	.002

\*p<.05

## Appendix E - Data Tables

**Table E.42: ANOVA Results for Relationships Between Classroom Environment Performance and Head of School Academic Background**

CE Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Create an environment of respect and rapport in the classroom	Between Groups	.426	3	.142	.527	.664
	Within Groups	39.117	145	.270		
	Total	39.544	148			
Establish a culture for learning in the classroom	Between Groups	.547	3	.182	.614	.607
	Within Groups	43.090	145	.297		
	Total	43.638	148			
Manage classroom procedures	Between Groups	1.261	3	.420	1.078	.360
	Within Groups	56.537	145	.390		
	Total	57.799	148			
Maintain order and discipline in the classroom	Between Groups	.627	3	.209	.685	.562
	Within Groups	44.245	145	.305		
	Total	44.872	148			
Manage student behavior	Between Groups	.942	3	.314	1.045	.375
	Within Groups	43.568	145	.300		
	Total	44.510	148			
Organize physical space for an optimal learning environment	Between Groups	.390	3	.130	.250	.861
	Within Groups	75.368	145	.520		
	Total	75.758	148			
Use a variety of questioning and discussion techniques	Between Groups	2.195	3	.732	1.479	.223
	Within Groups	71.698	145	.494		
	Total	73.893	148			
<b>Provide meaningful feedback to students</b>	Between Groups	3.953	3	1.318	<b>2.828</b>	<b>.041</b>
	Within Groups	67.094	144	.466		
	Total	71.047	147			
Demonstrate flexibility and responsiveness	Between Groups	1.233	3	.411	.928	.429
	Within Groups	64.257	145	.443		
	Total	65.490	148			
Demonstrate a positive attitude and enthusiasm for teaching	Between Groups	.213	3	.071	.210	.889
	Within Groups	48.780	144	.339		
	Total	48.993	147			

**Table E.43 – Post Hoc Results for Differences in Means Between Classroom Environment Performance and Head of School Academic Background**

Dependent Variable	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
How well - Provide meaningful feedback to students	Bachelors degree plus additional coursework	Masters degree	-.292	.312	.785
		Masters degree plus additional coursework	.084	.288	.991
		Doctoral degree	.227	.303	.876
	Masters degree	Bachelors degree plus additional coursework	.292	.312	.785
		Masters degree plus additional coursework	.376	.158	.085
		Doctoral degree	.519*	.183	.027
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.084	.288	.991
		Masters degree	-.376	.158	.085
		Doctoral degree	.143	.140	.737
	Doctoral degree	Bachelors degree plus additional coursework	-.227	.303	.876
		Masters degree	-.519*	.183	.027
		Masters degree plus additional coursework	-.143	.140	.737

\*p<.05

## Appendix E - Data Tables

**Table E.44: ANOVA Results for Relationships Between Communication, Community, and Growth Performance and School Location**

CCG Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Communicate clearly and accurately with students	Between Groups	.276	2	.138	.381	.684
	Within Groups	52.918	146	.362		
	Total	53.195	148			
<b>Communicate clearly and accurately with colleagues</b>	Between Groups	2.969	2	1.485	<b>3.699</b>	<b>.027</b>
	Within Groups	58.601	146	.401		
	Total	61.570	148			
Communicate clearly and accurately with parents	Between Groups	2.596	2	1.298	3.038	.051
	Within Groups	62.397	146	.427		
	Total	64.993	148			
Communicate clearly and accurately with administrators	Between Groups	1.835	2	.917	2.345	.099
	Within Groups	57.105	146	.391		
	Total	58.940	148			
Have professional interactions with parents	Between Groups	1.557	2	.779	1.908	.152
	Within Groups	59.570	146	.408		
	Total	61.128	148			
Work well with colleagues	Between Groups	1.911	2	.956	2.464	.089
	Within Groups	56.639	146	.388		
	Total	58.550	148			
Contribute to the overall school community	Between Groups	1.347	2	.673	1.248	.290
	Within Groups	78.788	146	.540		
	Total	80.134	148			
Grow and develop professionally	Between Groups	2.582	2	1.291	2.233	.111
	Within Groups	84.411	146	.578		
	Total	86.993	148			
<b>Show professionalism</b>	Between Groups	2.747	2	1.373	<b>3.918</b>	<b>.022</b>
	Within Groups	50.478	144	.351		
	Total	53.224	146			

## Appendix E - Data Tables

**Table E.45 – Post Hoc Results for Differences in Means Between Communication, Community, and Growth Performance and School Location**

CCG Characteristic	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Communicate clearly and accurately with colleagues	Rural	Suburban	-.046	.162	.957
		Urban	-.389	.189	.102
	Suburban	Rural	.046	.162	.957
		Urban	-.343*	.132	.027
	Urban	Rural	.389	.189	.102
		Suburban	.343*	.132	.027
How well - Show professionalism	Rural	Suburban	.111	.152	.745
		Urban	-.233	.177	.385
	Suburban	Rural	-.111	.152	.745
		Urban	-.344*	.123	.016
	Urban	Rural	.233	.177	.385
		Suburban	.344*	.123	.016

\*p<.05

**Table E.46: ANOVA Results for Relationships Between Communication, Community, and Growth Performance and School Size**

CCG Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Communicate clearly and accurately with students	Between Groups	.186	4	.046	.128	.972
	Within Groups	55.694	153	.364		
	Total	55.880	157			
Communicate clearly and accurately with colleagues	Between Groups	1.738	4	.434	1.064	.377
	Within Groups	62.496	153	.408		
	Total	64.234	157			
Communicate clearly and accurately with parents	Between Groups	2.097	4	.524	1.186	.319
	Within Groups	67.675	153	.442		
	Total	69.772	157			
Communicate clearly and accurately with administrators	Between Groups	.543	4	.136	.328	.859
	Within Groups	63.230	153	.413		
	Total	63.772	157			
Have professional interactions with parents	Between Groups	.947	4	.237	.567	.687
	Within Groups	63.914	153	.418		
	Total	64.861	157			
Work well with colleagues	Between Groups	.991	4	.248	.609	.657
	Within Groups	62.256	153	.407		
	Total	63.247	157			
Contribute to the overall school community	Between Groups	1.693	4	.423	.796	.530
	Within Groups	81.345	153	.532		
	Total	83.038	157			
<b>Grow and develop professionally</b>	Between Groups	7.835	4	1.959	<b>3.482</b>	<b>.009</b>
	Within Groups	86.064	153	.563		
	Total	93.899	157			
Show professionalism	Between Groups	2.357	4	.589	1.638	.168
	Within Groups	54.310	151	.360		
	Total	56.667	155			

## Appendix E - Data Tables

**Table E.47 – Post Hoc Results for Differences in Means Between Communication, Community, and Growth Performance and School Size**

CCG Characteristic	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Grow and develop professionally	Under 201	201 - 300	.039	.207	1.000
		301 - 500	-.181	.177	.844
		501 - 700	-.433	.215	.263
		Over 700	-.502*	.163	.020
	201 - 300	Under 201	-.039	.207	1.000
		301 - 500	-.221	.211	.835
		501 - 700	-.472	.244	.302
		Over 700	-.542	.200	.057
	301 - 500	Under 201	.181	.177	.844
		201 - 300	.221	.211	.835
		501 - 700	-.252	.219	.779
		Over 700	-.321	.168	.317
	501 - 700	Under 201	.433	.215	.263
		201 - 300	.472	.244	.302
		301 - 500	.252	.219	.779
		Over 700	-.069	.207	.997
	Over 700	Under 201	.502*	.163	.020
		201 - 300	.542	.200	.057
		301 - 500	.321	.168	.317
		501 - 700	.069	.207	.997

\*p<.05



**Table E.48 - ANOVA Test Results for Relationship Between Characteristics of Professional Development and School Size**

Professional Development Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Delivered by administrators or other support staff	Between Groups	.603	4	.151	.461	.764
	Within Groups	47.397	145	.327		
	Total	48.000	149			
Delivered by an outside organization (school is not involved in planning or delivery)	Between Groups	.192	4	.048	.133	.970
	Within Groups	52.116	144	.362		
	Total	52.309	148			
<b>Delivered by teachers</b>	Between Groups	4.259	4	1.065	<b>3.113</b>	<b>.017</b>
	Within Groups	48.570	142	.342		
	Total	52.830	146			
Designed for teachers and administrators to participate together	Between Groups	4.107	4	1.027	1.630	.170
	Within Groups	90.075	143	.630		
	Total	94.182	147			
Evaluated for evidence of improvement in teacher classroom practice	Between Groups	4.479	4	1.120	1.601	.177
	Within Groups	99.317	142	.699		
	Total	103.796	146			
Evaluated for evidence of effects on student achievement	Between Groups	2.155	4	.539	.898	.467
	Within Groups	85.818	143	.600		
	Total	87.973	147			
Planned by administrators or other support staff	Between Groups	.541	4	.135	.482	.749
	Within Groups	40.399	144	.281		
	Total	40.940	148			
<b>Planned by teachers</b>	Between Groups	5.328	4	1.332	<b>3.813</b>	<b>.006</b>
	Within Groups	50.645	145	.349		
	Total	55.973	149			
Accompanied by the resources that teachers need (e.g., time and materials) to make changes in the classroom	Between Groups	2.575	4	.644	1.356	.252
	Within Groups	67.878	143	.475		
	Total	70.453	147			

## Appendix E - Data Tables

**Table E.49 - Post Hoc Results for Differences of Means Between Characteristics of Professional Development and School Size**

Dependent Variable	(I) Categories of school size	(J) Categories of school size	Mean Difference (I-J)	Std. Error	Sig.
Delivered by teachers	Under 201	201 - 300	-.139	.166	.917
		301 - 500	-.303	.144	.224
		501 - 700	-.162	.171	.880
		Over 700	-.451*	.135	.010
	201 - 300	Under 201	.139	.166	.917
		301 - 500	-.164	.166	.861
		501 - 700	-.022	.190	1.000
		Over 700	-.312	.158	.287
	301 - 500	Under 201	.303	.144	.224
		201 - 300	.164	.166	.861
		501 - 700	.141	.171	.922
		Over 700	-.148	.135	.810
	501 - 700	Under 201	.162	.171	.880
		201 - 300	.022	.190	1.000
		301 - 500	-.141	.171	.922
		Over 700	-.289	.164	.399
	Over 700	Under 201	.451*	.135	.010
		201 - 300	.312	.158	.287
		301 - 500	.148	.135	.810
		501 - 700	.289	.164	.399
Planned by teachers	Under 201	201 - 300	-.244	.165	.575
		301 - 500	-.338	.142	.128
		501 - 700	-.297	.174	.431
		Over 700	-.513*	.133	.002
	201 - 300	Under 201	.244	.165	.575
		301 - 500	-.094	.167	.980
		501 - 700	-.053	.195	.999
		Over 700	-.268	.159	.448
	301 - 500	Under 201	.338	.142	.128
		201 - 300	.094	.167	.980
		501 - 700	.041	.176	.999
		Over 700	-.174	.136	.704
501 - 700	Under 201	.297	.174	.431	
	201 - 300	.053	.195	.999	
	301 - 500	-.041	.176	.999	
	Over 700	-.215	.169	.707	
Over 700	Under 201	.513*	.133	.002	
	201 - 300	.268	.159	.448	
	301 - 500	.174	.136	.704	
	501 - 700	.215	.169	.707	

\*\*p<.01

## Appendix E - Data Tables

**Table E.50 - ANOVA Test Results for Relationship Between Characteristics of Professional Development and Heads of School Academic Background**

Professional Development Characteristics		Sum of Squares	df	Mean Square	F	Sig.
Delivered by administrators or other support staff	Between Groups	1.569	3	.523	1.647	.181
	Within Groups	45.702	144	.317		
	Total	47.270	147			
Delivered by an outside organization (school is not involved in planning or delivery)	Between Groups	1.439	3	.480	1.352	.260
	Within Groups	50.738	143	.355		
	Total	52.177	146			
Delivered by teachers	Between Groups	.842	3	.281	.776	.509
	Within Groups	50.992	141	.362		
	Total	51.834	144			
Designed for teachers and administrators to participate together	Between Groups	.664	3	.221	.336	.799
	Within Groups	93.507	142	.659		
	Total	94.171	145			
Evaluated for evidence of improvement in teacher classroom practice	Between Groups	4.577	3	1.526	2.186	.092
	Within Groups	98.430	141	.698		
	Total	103.007	144			
Evaluated for evidence of effects on student achievement	Between Groups	4.238	3	1.413	2.426	.068
	Within Groups	82.700	142	.582		
	Total	86.938	145			
<b>Planned by administrators or other support staff</b>	Between Groups	2.223	3	.741	<b>2.737</b>	<b>.046</b>
	Within Groups	38.716	143	.271		
	Total	40.939	146			
<b>Planned by teachers</b>	Between Groups	3.067	3	1.022	<b>2.812</b>	<b>.042</b>
	Within Groups	52.359	144	.364		
	Total	55.426	147			
Accompanied by the resources that teachers need (e.g., time and materials) to make changes in the classroom	Between Groups	3.531	3	1.177	2.586	.056
	Within Groups	64.633	142	.455		
	Total	68.164	145			

## Appendix E - Data Tables

**Table E.51 - Post Hoc Tukey Test Results for Differences of Means Between Heads' Backgrounds and Characteristics of Professional Development**

Professional Development Characteristic	(I) Respondent academic background	(J) Respondent academic background	Mean Difference (I-J)	Std. Error	Sig.
Planned by administrators or other support staff	Bachelors degree plus additional coursework	Masters degree	.667*	.237	.029
		Masters degree plus additional coursework	.500	.220	.109
		Doctoral degree	.559	.230	.077
	Masters degree	Bachelors degree plus additional coursework	-.667*	.237	.029
		Masters degree plus additional coursework	-.167	.121	.513
		Doctoral degree	-.108	.139	.865
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	-.500	.220	.109
		Masters degree	.167	.121	.513
		Doctoral degree	.059	.106	.945
	Doctoral degree	Bachelors degree plus additional coursework	-.559	.230	.077
		Masters degree	.108	.139	.865
		Masters degree plus additional coursework	-.059	.106	.945
Planned by teachers	Bachelors degree plus additional coursework	Masters degree	-.625	.275	.110
		Masters degree plus additional coursework	-.722*	.255	.027
		Doctoral degree	-.727*	.268	.037
	Masters degree	Bachelors degree plus additional coursework	.625	.275	.110
		Masters degree plus additional coursework	-.097	.139	.900
		Doctoral degree	-.102	.162	.921
	Masters degree plus additional coursework	Bachelors degree plus additional coursework	.722*	.255	.027
		Masters degree	.097	.139	.900
		Doctoral degree	-.006	.124	1.000
	Doctoral degree	Bachelors degree plus additional coursework	.727*	.268	.037
		Masters degree	.102	.162	.921
		Masters degree plus additional coursework	.006	.124	1.000

\*p<.05

## Appendix E - Data Tables

**Table E.52 - ANOVA Test Results for Relationship Between Characteristics of Professional Development and Heads' Years of Teaching Experience**

Professional Development Characteristic		Sum of Squares	df	Mean Square	F	Sig.
Delivered by administrators or other support staff	Between Groups	1.370	4	.342	1.060	.379
	Within Groups	45.223	140	.323		
	Total	46.593	144			
<b>Delivered by an outside organization (school is not involved in planning or delivery)</b>	Between Groups	3.472	4	.868	<b>2.512</b>	<b>.044</b>
	Within Groups	48.021	139	.345		
	Total	51.493	143			
Delivered by teachers	Between Groups	.557	4	.139	.377	.825
	Within Groups	50.605	137	.369		
	Total	51.162	141			
Designed for teachers and administrators to participate together	Between Groups	.702	4	.175	.261	.902
	Within Groups	92.599	138	.671		
	Total	93.301	142			
<b>Evaluated for evidence of improvement in teacher classroom practice</b>	Between Groups	9.121	4	2.280	<b>3.356</b>	<b>.012</b>
	Within Groups	93.076	137	.679		
	Total	102.197	141			
<b>Evaluated for evidence of effects on student achievement</b>	Between Groups	7.361	4	1.840	<b>3.234</b>	<b>.014</b>
	Within Groups	78.527	138	.569		
	Total	85.888	142			
Planned by administrators or other support staff	Between Groups	.290	4	.073	.261	.903
	Within Groups	38.703	139	.278		
	Total	38.993	143			
Planned by teachers	Between Groups	.474	4	.119	.306	.874
	Within Groups	54.284	140	.388		
	Total	54.759	144			
<b>Accompanied by the resources that teachers need (e.g., time and materials) to make changes in the classroom</b>	Between Groups	7.418	4	1.855	<b>4.132</b>	<b>.003</b>
	Within Groups	61.938	138	.449		
	Total	69.357	142			

## Appendix E - Data Tables

**Table E.53 - Post Hoc Tukey Test Results for Differences in Means Between Characteristics of Professional Development and Heads' Years of Teaching Experience**

Professional Development Characteristics	(I) Categories of years teaching	(J) Categories of years teaching	Mean Difference (I-J)	Std. Error	Sig.
Evaluated for evidence of improvement in teacher classroom practice	0 - 6 years	7 - 11 years	-.184	.206	.899
		12 - 19 years	-.313	.191	.477
		20+ years	-.600*	.208	.036
		Not applicable	.382	.324	.763
	7 - 11 years	0 - 6 years	.184	.206	.899
		12 - 19 years	-.128	.198	.967
		20+ years	-.416	.215	.302
		Not applicable	.567	.328	.420
	12 - 19 years	0 - 6 years	.313	.191	.477
		7 - 11 years	.128	.198	.967
		20+ years	-.288	.200	.604
		Not applicable	.695	.319	.193
	20+ years	0 - 6 years	.600*	.208	.036
		7 - 11 years	.416	.215	.302
		12 - 19 years	.288	.200	.604
		Not applicable	.983*	.329	.027
	Not applicable	0 - 6 years	-.382	.324	.763
		7 - 11 years	-.567	.328	.420
		12 - 19 years	-.695	.319	.193
		20+ years	-.983*	.329	.027
Evaluated for evidence of effects on student achievement	0 - 6 years	7 - 11 years	-.165	.189	.907
		12 - 19 years	-.338	.175	.306
		20+ years	-.575*	.191	.025
		Not applicable	.180	.283	.969
	7 - 11 years	0 - 6 years	.165	.189	.907
		12 - 19 years	-.173	.181	.874
		20+ years	-.410	.196	.231
		Not applicable	.344	.287	.751
	12 - 19 years	0 - 6 years	.338	.175	.306
		7 - 11 years	.173	.181	.874
		20+ years	-.237	.183	.694
		Not applicable	.518	.278	.342
	20+ years	0 - 6 years	.575*	.191	.025
		7 - 11 years	.410	.196	.231
		12 - 19 years	.237	.183	.694
		Not applicable	.755	.288	.072
	Not applicable	0 - 6 years	-.180	.283	.969
		7 - 11 years	-.344	.287	.751
		12 - 19 years	-.518	.278	.342
		20+ years	-.755	.288	.072
Accompanied by the resources that teachers need (e.g., time and materials) to make	0 - 6 years	7 - 11 years	-.473*	.168	.044

## Appendix E - Data Tables

changes in the classroom				
	12 - 19 years	-.206	.155	.672
	20+ years	-.533*	.169	.017
	Not applicable	.169	.263	.968
7 - 11 years	0 - 6 years	.473*	.168	.044
	12 - 19 years	.267	.160	.459
	20+ years	-.061	.174	.997
	Not applicable	.642	.267	.120
12 - 19 years	0 - 6 years	.206	.155	.672
	7 - 11 years	-.267	.160	.459
	20+ years	-.328	.162	.260
	Not applicable	.375	.258	.596
20+ years	0 - 6 years	.533*	.169	.017
	7 - 11 years	.061	.174	.997
	12 - 19 years	.328	.162	.260
	Not applicable	.703	.268	.071
Not applicable	0 - 6 years	-.169	.263	.968
	7 - 11 years	-.642	.267	.120
	12 - 19 years	-.375	.258	.596
	20+ years	-.703	.268	.071

\*p<.05



## Appendix E - Data Tables

**Table E.54 - ANOVA Test Results for Relationship Between Influence on Professional Development Content Decisions and School Location**

		Sum of Squares	df	Mean Square	F	Sig.
<b>Head of School/Administration</b>	Between Groups	1.100	2	.550	<b>3.139</b>	<b>.046</b>
	Within Groups	25.407	145	.175		
	Total	26.507	147			
Curriculum Specialists	Between Groups	8.169	2	4.084	1.957	.145
	Within Groups	302.554	145	2.087		
	Total	310.723	147			
Governing Board	Between Groups	2.795	2	1.398	2.857	.061
	Within Groups	70.934	145	.489		
	Total	73.730	147			
Parents	Between Groups	.674	2	.337	.741	.478
	Within Groups	65.994	145	.455		
	Total	66.669	147			
Teachers	Between Groups	2.032	2	1.016	2.931	.057
	Within Groups	50.612	146	.347		
	Total	52.644	148			

**Table E.55 - Post Hoc Results for Difference in Means Between Influence on Professional Development Content Decisions and School Location**

Dependent Variable	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Head of School/ Administration	Rural	Suburban	.260*	.107	.043
		Urban	.167	.125	.378
	Suburban	Rural	-.260*	.107	.043
		Urban	-.093	.087	.534
	Urban	Rural	-.167	.125	.378
		Suburban	.093	.087	.534
Curriculum Specialists	Rural	Suburban	-.074	.370	.978
		Urban	-.644	.431	.296
	Suburban	Rural	.074	.370	.978
		Urban	-.570	.301	.144
	Urban	Rural	.644	.431	.296
		Suburban	.570	.301	.144
Governing Board	Rural	Suburban	.166	.179	.626
		Urban	.456	.209	.077
	Suburban	Rural	-.166	.179	.626
		Urban	.290	.146	.118
	Urban	Rural	-.456	.209	.077
		Suburban	-.290	.146	.118
Parents	Rural	Suburban	-.161	.173	.621
		Urban	-.244	.201	.446
	Suburban	Rural	.161	.173	.621
		Urban	-.083	.140	.824
	Urban	Rural	.244	.201	.446
		Suburban	.083	.140	.824
Teachers	Rural	Suburban	-.194	.151	.406
		Urban	-.411	.176	.053
	Suburban	Rural	.194	.151	.406
		Urban	-.217	.122	.181
	Urban	Rural	.411	.176	.053
		Suburban	.217	.122	.181

\*p<.05

## Appendix E - Data Tables

**Table E.56 - ANOVA Tests for Relationship Between Influence on Professional Development Decisions and Head of School Academic Background**

		Sum of Squares	df	Mean Square	F	Sig.
Head of School/Administration	Between Groups	.754	4	.189	1.054	.382
	Within Groups	25.039	140	.179		
	Total	25.793	144			
Curriculum Specialists	Between Groups	17.212	4	4.303	2.075	.087
	Within Groups	290.347	140	2.074		
	Total	307.559	144			
Governing board	Between Groups	1.676	4	.419	.753	.558
	Within Groups	77.951	140	.557		
	Total	79.628	144			
Parents	Between Groups	.810	4	.203	.423	.792
	Within Groups	67.052	140	.479		
	Total	67.862	144			
<b>Teachers</b>	Between Groups	3.802	4	.951	<b>2.792</b>	<b>.029</b>
	Within Groups	48.013	141	.341		
	Total	51.815	145			

**Table E.57 - Post Hoc Results for Difference of Means Between Influence on Professional Development and Head of School Years of Teaching Experience**

Influence	(I) Categories of years teaching	(J) Categories of years teaching	Mean Difference (I-J)	Std. Error	Sig.
Teachers	0 - 6 years	7 - 11 years	-.090	.145	.971
		12 - 19 years	-.205	.134	.543
		20+ years	-.190	.145	.684
		Not applicable	.454	.218	.234
	7 - 11 years	0 - 6 years	.090	.145	.971
		12 - 19 years	-.114	.139	.924
		20+ years	-.100	.151	.964
		Not applicable	.544	.222	.107
	12 - 19 years	0 - 6 years	.205	.134	.543
		7 - 11 years	.114	.139	.924
		20+ years	.014	.139	1.000
		Not applicable	.659*	.214	.021
	20+ years	0 - 6 years	.190	.145	.684
		7 - 11 years	.100	.151	.964
		12 - 19 years	-.014	.139	1.000
		Not applicable	.644*	.222	.034
Not applicable	0 - 6 years	-.454	.218	.234	
	7 - 11 years	-.544	.222	.107	
	12 - 19 years	-.659*	.214	.021	
	20+ years	-.644*	.222	.034	

\*p<.05.

## Appendix E - Data Tables

**Table E.58 - ANOVA Test of Relationship Between Priorities for Professional Development and School Location**

Professional Development Priority		Sum of Squares	df	Mean Square	F	Sig.
Assessing Student Learning	Between Groups	2.779	2	1.389	3.025	.061
	Within Groups	16.996	37	.459		
	Total	19.775	39			
Classroom Management	Between Groups	4.808	2	2.404	<b>6.868</b>	<b>.013</b>
	Within Groups	3.500	10	.350		
	Total	8.308	12			
Communication	Between Groups	1.596	2	.798	1.150	.337
	Within Groups	13.882	20	.694		
	Total	15.478	22			
Content Knowledge	Between Groups	.658	2	.329	.523	.598
	Within Groups	18.857	30	.629		
	Total	19.515	32			
Instructional Delivery	Between Groups	.056	2	.028	.055	.947
	Within Groups	26.381	52	.507		
	Total	26.436	54			
Instructional Strategies	Between Groups	.476	2	.238	.353	.704
	Within Groups	39.798	59	.675		
	Total	40.274	61			
Technology	Between Groups	.421	2	.211	.295	.746
	Within Groups	31.451	44	.715		
	Total	31.872	46			
Classroom Environment	Between Groups	1.600	2	.800	2.240	.177
	Within Groups	2.500	7	.357		
	Total	4.100	9			
Pedagogical Knowledge	Between Groups	.814	2	.407	.610	.547
	Within Groups	40.043	60	.667		
	Total	40.857	62			
Professionalism	Between Groups	3.717	2	1.858	3.724	.046
	Within Groups	8.483	17	.499		
	Total	12.200	19			
Teacher Attitudes	Between Groups	.786	2	.393	.784	.472
	Within Groups	9.024	18	.501		
	Total	9.810	20			
Differentiating Instruction	Between Groups	.316	2	.158	.241	.787
	Within Groups	30.804	47	.655		
	Total	31.120	49			

## Appendix E - Data Tables

**Table E.59 - Post Hoc Results for Differences Between Priorities for Professional Development and School Location**

Professional Development Priority	(I) School location	(J) School location	Mean Difference (I-J)	Std. Error	Sig.
Classroom Environment	Rural	Suburban	-1.250	.468	.056
		Urban	-2.000*	.540	.010
	Suburban	Rural	1.250	.468	.056
		Urban	-.750	.401	.197
	Urban	Rural	2.000*	.540	.010
		Suburban	.750	.401	.197

\*p≤.01

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