The Relationship between Teacher Training Programs and Teacher Effectiveness as Perceived by Principals

By

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Abstract

Many studies have aimed to study the relationship between teacher certification and teacher effectiveness by relying on student achievement data as the independent variable. In this study, principals of Ontario Christian schools are surveyed to assess the relationship between their perception of teacher effectiveness in domains of Christian Perspective and Pedagogical Performance and the teacher training institution that teachers graduate from. Through an analysis of 317 teacher ratings, it was found that there is no significant correlation between institution of teacher training and teacher effectiveness as perceived by principals. Instead, it was found that years of experience teaching and teacher gender are better predictors of teacher effectiveness in some categories.

The Relationship between Teacher Training Programs and

Teacher Effectiveness as Perceived by Principals

Principals and school leaders know intuitively that the quality of their schools is dependent upon the quality of their teachers and the performance of those teachers in the school's classrooms. Clotfelter, Ladd, and Vigdor (2010) claim that "Nearly all observers of the education process, including scholars, school administrators, policymakers, and parents, point to teacher quality as the most significant institutional determinant of student achievement" (p.655).

Many studies have aimed to provide empirical research directed at illustrating a positive correlation between teacher quality and school quality (Brouwer & Korthagen, 2005; Darling-Hammond, Barnett, & Thoreson, 2001; Heck, 2008; Nye, Kanstantopoulos, & Hedges, 2004). Teacher quality, however, is a difficult term to define and "is a complex phenomenon" with "little consensus regarding how it should be defined and measured" (Heck, p. 229). Many researchers have turned to student achievement data as the primary means of connecting teacher quality to school quality (Buddin & Zamarro, 2009, Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Clotfelter, Ladd, & Vigdorn, 2010; Rivkin, Hanushek, & Kain, 2005; Wayne & Youngs, 2003). The logical assumption is that if schools have high-quality teachers, student achievement will improve (Thomas & Loadman, 2001). While this seems intuitive, the research, which will be expanded in detail below, has been inconsistent in proving this.

Much of the data regarding teacher quality fall into a broad and seemingly measurable category which can be termed 'teaching qualifications' (Heck, 2008) and can include such aspects as: subject area competency, years of experience, continued professional development, certification level, and teacher training program institution attended. Teacher training program institutions, as one aspect of teaching qualifications, have also been inconsistently linked to

increased student achievement. Some researchers claim that there is no relationship between a teacher's alma mater and student achievement (Buddin & Zamarro, 2009; Rivkin et al, 2005), while some are indeterminate. For example, in 2003, Wayne and Youngs reviewed three studies completed between 1975-1994 and found that one paper demonstrated little correlation between a college's Gourman rating (a for-profit American university rankings system) and student achievement, another found no relationship between student vocabulary scores and teacher college ratings, and a third uncovered that teachers from more highly rated undergraduate institutions were more effective with white and black students, but indeterminate with Hispanics. Some other recent researchers, however, conclude more positively that there is in fact a correlation between where a teacher receives his/her teacher training and student achievement in certain situations (Brouwer & Korthagen, 2005; Boyd et al., 2009; Clotfelter et al., 2010; Wayne & Youngs, 2003).

This study will continue the work of investigating the effects of teacher training programs by exploring the correlation between where Christian school teachers in Ontario receive their teacher training, and the perception of their performance by their principals. Anecdotal evidence suggests that many principals in Christian schools prefer to hire teachers who have received their teacher training from Christian universities. In doing this, school principals involved in the hiring process are assuming that teachers graduating from these institutions will be high quality teachers who have exceptional performance in their schools and classrooms. In Christian schools, however, the quality of teachers and the perception of their performance are exacerbated by the expectation that they will be able to incorporate the Christian faith into their teaching. Christian school teachers are expected to have both good pedagogical performance and an ability to integrate a Christian perspective in their craft. This study will add to the body of research

exploring the relationship between teacher training programs and teacher effectiveness. By studying both pedagogical performance and a teacher's ability to integrate a Christian perspective into their teaching, this paper will help to uncover the aspects of teacher effectiveness that student achievement scores have difficulty illustrating.

Conceptual Framework

There is little disagreement that teachers make a difference. Logic dictates that high quality teachers should lead to better school and student outcomes. Lasley, Siedentop, and Yinger (2006), are candid when they claim that, "The goal of everyone is or should be similar—a highly qualified and highly effective teacher in every classroom" (p.14). When politicians, policymakers, and principals are exploring ways to improve schools, they can and should focus on teachers because they are "the system's principal resource" (Wayne & Youngs, 2003, p. 89). Most districts and regions have as their primary means of developing teachers a prerequisite teacher training program that prospective teachers must complete prior to entering the classroom. The assumption is that high-quality teacher training programs will lead to high quality teachers.

The logistics of attaining this training prerequisite varies widely according to locale and is outside of the scope of this study to explore. However, the goal of teacher training programs, according to Lasley et al. (2006), "is the preparation of teachers who make a difference in the classroom" (p.14). Although there is disagreement in the research literature regarding just what aspects of teacher training actually cause better school and student outcomes, most agree with the premise that "Only solid, well-trained professional teachers can change and solve the problems facing….schools" (Thomas & Loadman, 2001, p. 204). Because teachers generally commence their craft by completing a prerequisite training program, this study will explore the

connection between these training programs and the quality of the teachers within the schools that they serve.

Clotfelter, Ladd, and Vigdor (2007) admit that, "Education researchers and policy makers agree that teachers differ in terms of quality" (p.3). There are many reasons for this but the consensus, according to Clotfelter et al., is that teacher "quality matters for student achievement" (p.3). The problem is that it is "difficult to measure teacher quality" (p.3). Even though Heck (2008) agrees that teacher quality is a "complex phenomenon" and that "there is little consensus regarding how it should be defined" (p.229) his work is helpful in differentiating categories of teacher quality. His research differentiates three categories: teacher qualifications, teacher effects, and teacher effectiveness. Teacher qualifications are "observable attributes, preparation, and credentials" (p.229). Teacher effects refer to the "differences among teachers in producing student outcomes" and are characterized by classroom observations, questionnaire items, student achievement scores, etc. (p.229) whereas teacher effectiveness, "implies variability in the relationship between teacher instructional strategies, behaviour, or effects and student outcomes" (p.230). The focus of this study will be the relationship between teacher effectiveness and teacher qualifications.

The cohort of teachers who will form the basis of this study are Christian school teachers. Because of this distinction, teacher effectiveness will be regarded as an interplay of two mutually beneficial aspects: pedagogical performance, and integration of Christian perspective into classroom instruction. There is a great deal of writing on the topic regarding the distinctiveness of teaching with a Christian perspective and it will be helpful here to provide a cursory overview of how an integrated Christian perspective in teaching can be defined to distinguish it from pedagogical performance.

According to Van Dyk (2000), "The ultimate goal of all Christian teaching should be to lead…students into knowledgeable and competent discipleship" (p. 64). Discipleship here is seen as providing opportunities for students to love God and others through serving. Ultimately, subject matter and skills should in this view "contribute to the children's ability to serve" (p. 66). Van Dyk explains further that Christian teaching is both multidimensional, in that it includes Biblical concepts of faith, trust, fairness, creativity, social relations, etc., and formative, in that it seeks to influence students on a pathway towards discipleship. It is clear here that in addition to pedagogical performance, the Christian teacher is expected to exhibit a distinct Christian perspective towards teaching and that his/her performance will be assessed by their principals accordingly.

Pedagogical performance, on the other hand, refers to those methodological aspects that teachers employ in the classroom to drive student learning. Two teacher evaluation documents reviewed from Christian institutions outline important pedagogical performance measures as: managing classroom procedures, managing student behaviour, organizing physical space, demonstrating knowledge of content and pedagogy, designing coherent instruction, selecting instructional goals, engaging students in learning, etc. (Laurentian Hills Christian School, 2011; Society of Christian Schools British Columbia, 2001).

It is recognized here that it is possible to argue convincingly that a Christian teaching perspective cannot be separated from the pedagogical methodologies that the teacher employs in the classroom. It is necessary for this study, however, that the two are dichotomized so that their individual characteristics can be studied in relation to teacher training programs. Because the teachers in this study work at Christian schools they are different from their public school

counterparts who are not expected to incorporate a faith system into their teaching and thus will be assessed more heavily on only their pedagogical performance.

The next section will provide an overview of the literature related to relationships between teacher training programs and teacher effectiveness. These will be shown to be indecisive, limited to the data that are employed, and also limited by their inability to assess certain aspects of schools and teachers that are important to classrooms. It will be argued that principals, by using subjective and informal means, are capable judges of teacher effectiveness and may be able to shed light on aspects of teachers and teacher effectiveness that empirical studies focused on student achievement scores are unable to do.

Literature Review

While it may seem intuitive that teacher effectiveness will lead to good student outcomes and in turn quality schools, researchers, policymakers and economists have differed widely in the conclusions drawn about this supposedly apparent assertion. The cause of this is not a lack of study. Instead, perhaps, it is the inability of researchers to agree on what constitutes effective teachers and what factors of schools should be used as the benchmark in assessing these teachers. Many researchers have striven to make a connection between these variables. Because teacher effectiveness is difficult to measure, much of the research aiming to link the two focuses on student achievement scores as the determining variable. There are researchers that make conclusions both providing merit for teacher training programs and for discrediting them based on this variable.

Two researchers provide a polarizing example for this. Walsh (2001) claims to have reviewed approximately 150 studies, reports, and dissertations and found that “the academic research attempting to link teacher certification with student achievement is astonishingly

deficient (p. iii). She concludes, in fact, that the research shows that certified teachers are not more effective than their uncertified counterparts and that much of the research claiming otherwise is "flawed, sloppy, aged and sometimes academically dishonest" (p. 13). Rather, she claims that "attributes characterizing effective teachers are more likely to be found *outside* the domain of schools of education" (p. iv-v, italics hers). Walsh even goes so far as to mandate the elimination of teacher certification programs (p. vii).

Darling-Hammond (2002), conversely, claims that Walsh's characterization of others' research "more aptly describe[d] her own paper, which consistently misrepresents the statements of researchers, the findings of studies, and the evidence base for her own claims (p. 3). She goes on to claim that Walsh has ignored evidence, has given unfounded claims, has misrepresented the research, has methodological and double standard issues in her research, and uses illogical policy conclusions (p. 4-5). It is outside of the scope of this paper to refute the claims of either, but their debate is a good illustration of the contention inherent in this topic because of the stakes involved in making determinations either for or against. Conclusions drawn will have implications for policymakers, principals, and teachers.

Other studies have also tried to answer this question. Two conclusions are drawn by Rockoff and Speroni (2010) based on their review of the available research on teacher impacts on student achievement. The first is that teacher effectiveness varies widely. The second, they claim, is that qualifications that have traditionally determined teacher salary levels (ie. education/certification) have little relation to student outcomes, with the exception of experience. Similarly, Rivkin, Hanushek, and Kain (2005) assert that more restrictive certification standards and education levels will not result in higher quality teachers or better results in the classroom.

The research methods that have been undertaken to clarify this topic have varied over the years. It will be helpful here to outline some of the different empirical approaches taken to explore the relationship between teacher qualifications and teacher effectiveness. Buddin and Zamarro (2009) outline three approaches that have been used which are primarily based on the data available to the researchers at the time of each study. The first researchers used cross sectional data accumulated at the school level and related school test scores to measures of teacher competence. These early studies lacked the ability to control for prior achievement of students who may have attended different schools, and didn't account for the possibility of teachers (and students) being assigned non-randomly to certain classrooms and schools. In the latter argument it is not considered that teachers with varying credentials are often assigned by administrators to classes with varying needs, ie. a teacher with high credentials and many years of experience may be assigned to a low achieving class or vice versa. Nye, Konstantopolous, and Hedges (2004) question the causal direction of this problem: is it the teacher or the student achievement that is the cause of the high or low performance of the teacher? Another problem with this approach, according to Nye et al., is the inability of studies like this to interpret the relationship of school or teacher characteristics to achievement, both of which may be affected by individual, family, school, neighbourhood, and other factors.

Later studies used year-to-year variations in student and classroom achievement scores to gauge teacher effects. Nye et al. (2008) termed these types of studies Variation in Teacher Effects studies. According to Buddin and Zamarro (2009), this type of study is better able to control for student background and preparation. However, Nye et al. make it clear that this approach is not free from imperfections in that it assumes that between-classroom variance is

caused by teacher effects, and that it cannot identify the individual characteristics of teachers that may lead to the supposed teacher effects.

A third and more recent approach involves the use of panel data, which is data that has been accumulated over time using the same set of participants. This approach is better able to control for student and teacher heterogeneity and can link current student achievement level to current factors and factors from previous time periods. Nye et al. (2008) performed such an experiment in 2004 using data from the Tennessee Class Size Experiment. In this experiment, 79 elementary schools from 49 districts, beginning in kindergarten and progressing through grade 3, created 3 treatment conditions for children entering their classrooms: small classes (13-17 students), large classes (22-26 students), and large classes with full-time teacher aides (22-26 students). Teachers and students were then randomly assigned to these classrooms and an SAT test was given to each student in Math and Reading every year.

The researchers concluded from their study that teacher effects were more important than school effects. This is an important distinction – much school reform debate is centred on the principle that school-wide or district-wide reform efforts will be most effective, whereas this study is showing that the focus may be better placed on individual teacher improvement. They were unable to show, however, that teacher education had a statistically significant effect on student achievement. The value of their study, however, is not primarily the result, but in the use of a randomized classroom and teacher data set and the enhanced ability researchers can have in reaching conclusions about teacher effectiveness by using such a data set.

Buddin and Zamarro (2009) also make use of panel data in their study exploring teacher qualifications and student achievement. They use a data set from Los Angeles schools that tracks students from grades 2-5 and link them with individual teachers. The difference between their

study and that of Nye et al. (2008) is that the Los Angeles data does not randomly assign teachers and students to classrooms and is thus unable to guarantee that class assignment is not due to an inconsequential variable such as a high-performing teacher being assigned to a low-functioning class. Buddin and Zamarro conclude that teacher education has no effect on student achievement.

In a slightly different fashion, some studies have attempted to test the relationship between certain teacher training institutions and effects on student achievement. Boyd, Grossman, Lankford, Loeb, and Wyckoff (2009) analyzed 31 teacher education programs in New York City and linked this data to student achievement outcomes. Here teachers are linked to students after the fact and the randomization of both students and teachers is not guaranteed. Boyd et al. found that there were some teacher education programs that produced teachers who had significantly greater effects on student achievement scores. The conclusion made is that "preservice preparation can influence teacher effectiveness" (p. 436). Similarly, Clotfelter et al. performed two separate studies in 2007 and 2010. To rate the quality of teacher training institutions, the researchers used Barron's College Admission Selector rankings (aggregated to four categories: uncompetitive, competitive, very competitive, and unranked) to test the relationship between an institution's competitiveness, (and supposed better quality), and the effectiveness of its graduates. In 2007, they found that teachers who had graduated from competitive institutions were somewhat more effective than those from uncompetitive institutions. Paradoxically, they found that graduates from very competitive institutions were no more effective on average. Using the same categories in 2010, they found that the quality of a teacher's undergraduate alma mater is more predictive of higher student achievement at the highschool level than at the elementary school level. Further, most studies have shown that the

holding of a Master's degree has no bearing on teacher effectiveness and student achievement (Buddin & Zamarro, 2009; Clotfelter et al., 2007 Rivken et al.) except if received after the teacher was already active (Clotfelter et al., 2010).

These studies all aim to accomplish essentially the same goal of linking teacher training programs to teacher effectiveness. The majority of approaches have used student achievement scores in a variety of ways to measure possible correlations and have had difficulty showing a positive correlation between teacher training programs and teacher effectiveness. This approach itself has limitations which have largely been acknowledged by the researchers. There are, of course, classroom and teacher variables that are difficult to gauge using student achievement scores as the indicator. How, for example, can it be shown that a teacher training program can help a teacher to integrate a Christian teaching perspective into his/her work? How can student achievement scores measure an atmosphere of love and respect in the classroom? Student achievement scores will not be able to measure these intangible and important aspects of classrooms and teacher instruction.

Researches in recent years have begun trying to measure the effectiveness of Christian schools and Christian teaching in a systematic manner. In 2011, Cardus released its first study which used qualitative and quantitative methods to assess the "alignments between the motivations and outcomes of Christian education, to better understand the role of Christian schools" (Pennings, 2011, p. 5). The researchers in doing this study have acknowledged that there are outcomes of schooling which can't be measured using the traditional means of aligning student achievement scores and other variables.

In order to design an experiment that will test the relationship between teacher training programs and teacher effectiveness that takes place in Christian schools, it will be necessary to

use qualitative means to attain a quantifiable data set. There are two reasons for this. First, the Christian schools that are being studied lack a robust student achievement data set with which to work. Second, as mentioned above, there are aspects of Christian teaching which are difficult to measure objectively.

This study will require that principals assess the performance of teachers at their school. Jacob and Lefgren (2008) outline three sources from which principals receive their teacher performance information: formal and informal evaluations of the teacher's work with students and colleagues, formal and informal reports from parents, and student achievement scores. Informal assessments of teacher effectiveness are routinely administered by principals. Although these evaluations introduce an element of subjectivity as compared to the aforementioned approaches, the merit is that they "reflect valuable aspects of teaching not captured by student test scores" (Rockoff, 2004, p. 251) and that they can capture aspects of good teaching "not commonly available to the econometrician" (Jacob & Lefgren, 2008, p. 103).

Is it possible that principals are able to accurately assess the effectiveness of teachers using subjective and informal means? According to Rockoff (2004), "principals' opinions of teacher quality are highly correlated with student test scores" (p. 251). Further, research by Jacob and Lefgren (2008) shows that principals are effective at subjectively identifying good teacher performance when compared to objective measures and that "principals are generally effective at identifying the very best and worst teachers" (p. 129). This study will require that principals informally assess the effectiveness of their teachers. The research suggests that principals are adept at this and this informal and subjective method should lead to accurate teacher effectiveness measures.

Although there is a plethora of research striving to link teacher training programs and teacher effectiveness as it relates to student achievement the results have been inconsistent with many showing no relationship between teacher preparation programs and better classroom performance. The mixed results are alarming because most districts mandate a teacher training program with the assumption that it will adequately prepare its teachers to be highly effective in the classroom. Research has shown that principals are effective at accurately assessing teacher effectiveness. This study will complement the work summarized here by using informal principal assessments of teacher effectiveness in order to gauge the relationship between teacher training programs and teacher effectiveness in Christian schools as perceived by principals.

Methodology

Data Collection

In order to assess the relationship between teacher training programs and teacher effectiveness in Christian schools, a survey was sent in September of 2013 to 59 elementary schools associated with the Ontario Alliance of Christian Schools. It was decided to study only teachers and principals within the OACS schools to limit the data set and to retrieve a data set from schools that were similar in nature. Although the geographic location of these schools varies widely, the nature of them from a philosophical standpoint is quite homogenous: Many, if not all, of the schools originated out of a Dutch reformed heritage. Even though the extent to which they still reflect this heritage differs widely now, the schools surveyed in this study are more alike than they are dissimilar. All this is to say that within this school system it is safe to assume that principals face a similar pool from which to draw and hire teachers. Principals also will have similar backgrounds and credentials. The data set should therefore be highly reliable and homogenous in nature.

Early in September of 2013, a letter was sent to each of the principals (Appendix I). This letter provided principals with some basic information about the purpose of the research and told them to expect an email in the next 2 weeks with information about accessing the survey. Principals were assured that their responses were anonymous and that the information collected was going to be used with their privacy in mind. It was guaranteed that only the researcher, statistician, and the director of the graduate Educational Leadership program at Calvin College would see the raw data and that each of these participants would be required to complete a confidentiality agreement. It was also promised that each respondent would receive an executive summary of the results upon completion.

Each survey was designed and collected using fluidsurveys.com® and was distributed electronically to the email address for principals provided by the OACS. Each survey was identical. A sample screenshot can be found in Appendix III. Prior to distributing the survey, it was beta tested by a number of colleagues to gauge their experience with the goal of solving any problems prior to completion. There were some suggestions, but not many improvements were made because of the inflexibility of the platform and its limitations. The survey was designed so that it wouldn't take more than a minute to complete the questions in the survey for each teacher for which the principal answered.

Survey

The survey was designed to provide data that could be used to assess the relationship between teacher training programs and the principal's perception of teacher effectiveness. As discussed earlier, there were two facets of teacher effectiveness that were studied: pedagogical performance, and Christian perspective. Part of the survey was based on aspects of a survey that Jacob and Lefgren (2008) designed to measure the ability of principals to subjectively assess

teacher performance. It is hoped that by using aspects of their survey there will be some alignment and co-relation between their results and the results of this study. Jacob and Lefgren used ten teacher-rating questions of which only two will be used for this study. There are three reasons for choosing only two. First, because of the two-phase nature of this study, additional Christian perspective questions will be included. Second, it is recognized that if the survey is too complex, principals will not complete it and a large sample is desired. Third, Jacob and Lefgren used questions designed to correlate their study with student achievement data. This study does not make a student achievement data connection. For these reasons, the survey questions were limited to six.

The two rating categories borrowed from Jacob and Lefgren's study which were used to assess pedagogical performance (PP) were: Overall Teacher Effectiveness (PP1) and Classroom Management (PP2). One additional category, Demonstrating Knowledge of Content and Pedagogy (PP3), was included. Each of these categories were aligned (hyperlinked to) a rubric providing descriptors to guide principal consideration of them (Appendix II). The Christian perspective criteria were: Overall Christian Perspective (CP1), Creating an Environment of Respect and Rapport (CP2), and Engaging Students in Learning (CP3). Although these categories don't relate only to Christian schools, the descriptors are written in such a way that they will assess Christian perspective. Again, descriptors to guide principal consideration are included in Appendix II and hyperlinked to in the survey.

The majority of the basis for Appendix II was borrowed from the rubric used in evaluating teachers at Laurentian Hills Christian School (LHCS) in Kitchener, ON. As an OACS school, it is appropriate to assume that the descriptors in it are reflective of the collective identity of OACS schools and can accurately be used to assess the criteria that it is describing. The

descriptors appropriately reflect Christian perspective ideals. The descriptors for the pedagogical performance criteria are also taken from LHCS and don't have any distinctively Christian terminology in them.

Jacob and Lefgren used a ten-point scale that principals used to assess teacher effectiveness that ranged from 1 (inadequate) to 10 (exceptional). The scale used in the document from LHCS uses four categories: unsatisfactory, basic, proficient, and distinguished. The lowest and highest score descriptors are synonyms of Jacob and Lefgren's descriptors so no change was be made, while the middle two were kept as well. Number ratings were added to each category as follows: unsatisfactory (0-2), basic (3-5), proficient (6-8), and distinguished (9-10). Principals were asked for information about every teacher on staff at their school[1]. They were not required to list the names of teachers. For each teacher that was listed, principals were asked to provide their gender (male or female), years of experience (0-3, 3+)[2], teacher preparation university (secular, Christian), and institution of undergraduate preparation (secular, Christian) if applicable and in addition to the teacher preparation university. They were then asked to rate each teacher according to each of the aforementioned six categories within Pedagogical Performance and Christian Perspective.

All surveys were sent to principals via email and they or their vice-principal in charge of teacher supervision were asked to complete the survey. It was recognized from the start that

[1] One issue that arose during the collection process was that of the volume of part-time teachers. It was originally stipulated to only complete responses for teachers that were employed full-time. However, it became quickly apparent that this secluded a very large number of teachers. Instead, a revision was sent that asked principals to include part-time teachers, but to indicate in their responses which teachers were part-time. It is not suspected that this distinction will affect the data set or its interpretation.

[2] Nye et al. (2008) dichotomized years of experience using these two categories because of a supposed nonlinear effect of teacher experience with teachers becoming more skilled after the first few years of their career.

there were going to be a variety of reasons that would prohibit gaining a 100% school participation and response rate. First, the researcher of this survey principals two of the 59 OACS elementary schools and will be eliminated from participation. Second, it was believed that principals who are beginning their first year of service at a school will be unable to rate the effectiveness of their teachers with integrity. It was estimated that 2-3 schools would be in the aforementioned situation. In addition to those schools, it was predicted that another 5 schools would be delinquent with return. By the end of the collection period, responses from 38 schools were collected with data for 317 teachers. Although a smaller return than hoped for, this is still a rich data set with which to work.

The collection of survey responses was terminated in the middle of October 2013.

Data

Data Characteristics and Descriptive Statistics

Data for 317 teachers was collected. Four characteristics were collected for each teacher and are segregated by type in Table 1 and Table 2. As mentioned previously, teachers were dichotomized into two categories: 0-3 years of experience, and 3+ years of experience. Within the data set 48 teachers had 0-3 years of experience, while 269 teachers had accumulated experience in excess of 3 years. This is not unexpected as schools generally have more experienced than rookie faculty. Also expected was the fewer number of male teachers compared to female teachers with males representing roughly 15% of the teacher population from this data set. Surprising, however, is that this is even less than the Ontario public school average which in 2011 was around 26% male (Statistics Canada, 2013). This could be explained, however, by the fact that high school teachers were included in the Ontario data. The other possible explanation for this is that teachers in Ontario Christian schools are paid less than

their public school counterparts and so it is possible that the job is less appealing to men who are the primary breadwinners for a family. The number of teachers achieving their undergraduate degrees from a Christian university differed slightly with 41% attending a secular institution. However, the number of teachers choosing a secular institution for their teaching certification surpassed that percentage by 4 percent. While not significant, it could be inferred by this that some teachers are choosing to achieve their teaching certification from a different university than the one that they achieved their undergraduate training from. Nevertheless, the percentage of teachers attending either a secular or Christian university for undergraduate studies or teacher training is roughly equal.

Because principals were asked to rate teacher performance on a continuum according to set criteria, the range for the data in both Christian Perspective and Pedagogical Performance are whole numbers. The minimum statistic for the range is 2.00 and is found in PP2, CP2, and CP3, while the maximum range statistic of 10.00 can be found in all categories. The category with the lowest range difference of 5.00 is found in CP1 which is a measure of overall Christian perspective. The highest mean statistic is also found in this category. This is an interesting statistic in light of this study because it shows that principals are in general very happy with the ability of their teachers to integrate a Christian perspective into their practice regardless of the training and undergraduate institutions from which they graduate.

Table 1: Segregated Characteristics

Category	**Count**
0-3 Years Experience	48
3+ Years Experience	269
Female Teachers	268
Male Teachers	49
Christian Training Institution	174
Secular Training Institution	143
Christian Undergrad Institution	188

Secular Undergrad Institution	129

Table 2: Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Experience	317	1.00	.00	1.00	.8486	.35902
Gender	317	1.00	.00	1.00	.1546	.36207
TeacTrain	317	1.00	.00	1.00	.4511	.49839
Undergrad	317	1.00	.00	1.00	.4069	.49204
PP1	317	6.00	4.00	10.00	7.9243	1.18826
PP2	317	8.00	2.00	10.00	7.8297	1.34635
PP3	317	7.00	3.00	10.00	8.1167	1.16473
CP1	317	5.00	5.00	10.00	8.2208	1.15636
CP2	317	8.00	2.00	10.00	8.0189	1.40285
CP3	317	8.00	2.00	10.00	8.0189	1.26527
AvePPCP	317	6.00	4.00	10.00	8.0212	1.04361

Data Averages

Table 3 uses the segregated characteristics from Table 1 and shows the average scores from each PP and CP category. Although not useful in indicating those results that are statistically significant, the averages do help to illumine the relationships between the data. On average, those with 3+ years of experience consistently rated more highly than those with less experience except for their ability to create an environment of respect and rapport, and engaging students in learning. It is intuitive to come to this conclusion as it is assumed that experienced teachers become better teachers with more tenure. Why then do we see inexperienced teachers rating more highly on average in CP2 and CP3, if only by small margins?

Especially interesting is that across the categories female teachers rate consistently more highly on average than their male counterparts. There is very little difference on average in the categories when considering the teacher training program that a teacher gains his/her teacher

certification from. However, teachers with secular undergraduate training consistently outperform teachers from a Christian undergraduate program in most criteria by a small margin. When Christian Perspective is taken as a group, some trends are noted: 3+ years experience outperforms those with less experience by .20, and female teachers outperform male teachers by .34. When Pedagogical Performance is taken as a group, female teachers outperform males by .21,

Table 3: Segregated Averages

	PP1	PP2	PP3	AVGPP	CP1	CP2	CP3	AVGCP	AVGTOT
0-3 Years Experience	7.81	7.48	8.08	7.79	7.81	8.15	8.10	8.02	7.91
3+ Years Experience	7.94	7.89	8.12	7.99	8.29	8.00	8.00	8.10	8.04
Female Teachers	7.99	7.90	8.14	8.01	8.18	8.08	8.04	8.10	8.05
Male Teachers	7.57	7.45	8.00	7.67	8.45	7.67	7.90	8.01	7.84
Christian Training	7.86	7.84	8.01	7.90	8.30	7.98	7.92	8.06	7.98
Secular Training	7.99	7.81	8.23	8.01	8.10	8.08	8.13	8.10	8.06
Christian Undergrad	7.88	7.83	8.06	7.93	8.30	8.01	7.95	8.09	8.01
Secular Undergrad	7.98	7.83	8.19	8.00	8.10	8.03	8.12	8.09	8.04

Correlations

The initial statistical analysis that was run was a test of correlation between the independent variables (experience, gender, training institution, undergraduate institution) and the dependent variables (PP's and CP's). The results are shown in Table 4. The only correlation of significance that we see in the data is found with experienced teachers and their rating of overall Christian Perspective. This result should be read as insinuating that teachers with 3 or more years of experience are significantly and positively correlated to a higher rating in their overall ability to integrate a Christian Perspective into their teaching as rated by their principals. Because this result is significant and because the causal direction is clear, it can be argued that

teachers become better able to integrate a Christian perspective into their teaching as they become more experienced. This is the only correlation that is significant at the .01 level.

Table 4: Correlations		PP1	PP2	PP3	CP1	CP2	CP3
EXP	Pearson Correlation	.040	.110	.012	.149**	-.038	-.029
	Sig. (2-tailed)	.480	.050	.830	.008	.497	.613
	N	317	317	317	317	317	317
GENDER	Pearson Correlation	-.127*	-.121*	-.043	.085	-.105	-.041
	Sig. (2-tailed)	.024	.031	.446	.133	.061	.468
	N	317	317	317	317	317	317
TRAINING	Pearson Correlation	.047	-.012	.089	-.091	.038	.077
	Sig. (2-tailed)	.403	.825	.114	.106	.505	.173
	N	317	317	317	317	317	317
UNDERGRAD	Pearson Correlation	.042	.000	.055	-.086	.007	.069
	Sig. (2-tailed)	.456	.998	.330	.126	.899	.221
	N	317	317	317	317	317	317

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Regression Analysis

In order to determine whether results were significant when each independent variable was controlled for, the data were analyzed using SPSS. A regression analysis was employed (see Table 5) that treated each of the teacher characteristics (gender, years experience, nature of training certification institution, nature of undergraduate institution) as independent variables. The dependent variable in each regression was one of the teacher rating classifications that principals were asked to assess their teachers with. In Table 5 each of the independent variables was a dummy variable, having a value of 0 or 1. The results for ‘Experience’ must be read as the impact of a teacher having 3 or more years of experience, ‘Gender’ as the impact of being a male teacher, ‘Training’ as the impact of attending a secular teacher training institution, and ‘Undergrad’ as the effect of attending a secular undergraduate institution.

Consistent with the averages in Table 3, the regression analysis shows a significant result for gender when tested against PP1 (Overall Pedagogical Performance) and PP2 (Classroom Management). The effect of being a male on Overall Pedagogical Performance is a decrease in ratings of .40. This same effect is seen in Classroom Management with a decrease in ratings of .43. One other significant effect was found in the regression analysis when years of experience was tested against CP1 as the dependent variable. Teachers who had accumulated 3 or more years of experience could expect an increased rating of .46. This is consistent with the correlations and with the combined CP and CP1 averages found in Table 3.

Table 5: Regression Statistics

Dependent Variable: PP1

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.815	.199		39.347	.000
	Experience	.137	.189	.041	.723	.470
	Gender	-.403	.185	-.123	-2.181	.030
	Training	.099	.223	.041	.442	.658
	Undergrad	.027	.224	.011	.119	.905

Dependent Variable: PP2

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.559	.224		33.691	.000
	Experience	.388	.214	.104	1.816	.070
	Gender	-.425	.208	-.114	-2.040	.042
	Training	-.052	.252	-.019	-.207	.836
	Undergrad	.074	.254	.027	.292	.771

Dependent Variable: PP3

Model		Unstandardized Coefficients		Standardized Coefficients		

		B	Std. Error	Beta		
1	(Constant)	7.971	.196		40.761	.000
	Experience	.086	.186	.026	.459	.646
	Gender	-.122	.182	-.038	-.674	.501
	Training	.298	.219	.128	1.358	.175
	Undergrad	-.104	.221	-.044	-.473	.637

Dependent Variable: CP1

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.851	.192		40.947	.000
	Experience	.463	.183	.144	2.534	.012
	Gender	.291	.178	.091	1.633	.104
	Training	-.080	.215	-.035	-.372	.710
	Undergrad	-.079	.217	-.034	-.365	.715

Dependent Variable: CP2

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.194	.235		34.868	.000
	Experience	-.159	.224	-.041	-.709	.479
	Gender	-.416	.218	-.107	-1.905	.058
	Training	.219	.264	.078	.831	.407
	Undergrad	-.185	.266	-.065	-.695	.487

Dependent Variable: CP3

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	8.008	.213		37.636	.000
	Experience	-.062	.203	-.018	-.307	.759
	Gender	-.137	.198	-.039	-.695	.488
	Training	.142	.239	.056	.594	.553
	Undergrad	.052	.240	.020	.218	.828

Discussion

The aim of this experiment was to uncover whether or not there was a significant relationship between where a teacher received his/her teacher training certification and the rating of his/her performance by the principal at the school at which they were employed. It is clear from the findings of this study and using the instrument employed that there is no observable difference between a teacher who receives his/her teacher training from a secular institution, and the teacher who receives his/her training from a Christian institution. It is not immediately clear why this is the case, but this result is consistent with some of the research findings that cited no relationship between teacher training institutions and teacher performance, and contrary to other studies. One of the reasons for this may be that the present study differed in its approach from most other major studies in that it did not employ any directly empirical or objective data, per se. While many scholars have chosen to use student achievement data to show significant results in this topic, this study used no such measures. Instead, this study relied upon subjective performance evaluations by principals following the work of Jacob and Lefgren. In addition to this, studies of pedagogical performance of teachers in relation to their place of certification do not study the effects of their training institution on their ability to integrate a Christian perspective into their teaching.

This finding, that teacher training institution has no significant effect on the ability of teachers to integrate a Christian perspective into their teaching, will come as a surprise to some principals within these schools who have long assumed a relationship between Christian training institutions and good performance in both CP and PP domains, especially the former. Principals were given the opportunity to provide additional information in the form of anecdotal comments

prior to submitting their results. One of these comments raises a few questions in light of the results of this aspect of the survey:

> *"In [filling out this survey] my thoughts are good teachers come from both secular and Christian settings. You certainly notice the depth and understanding from the ones that come from Redeemer or Calvin or Dordt. It does take time for secular educated teachers to get to that same level. Plan A is to get top teachers educated in a Christian worldview. Plan B is to get a good teacher and bring them there. Another good option is to find a teacher who went through Christian elementary school or High School (gets Christian Ed.) but went to a secular university. At least there is a foundation to build upon!"*

From the context of this comment it can be inferred that this principal is has observed a difference in the ability of those trained at Christian institutions in their ability to integrate a Christian perspective into their pedagogy. This is contrary to the results of this study, but perhaps what this survey was unable to uncover, is that there are things that principals can do within schools that can help those from secular institutions to develop adequate Christian pedagogical perspectives. Another point made in this quote is that there may well be other effects that enable a teacher to become effective at integrating a Christian perspective into his/her teaching, such as background items like Christian elementary or high school, parents who support Christian education, etc. The results of this study make it clear, however, that principals should not assume that teachers from Christian training institutions are going to be able to better integrate a Christian perspective into their pedagogy. It may be necessary to provide a variety of supports to ensure that teachers are able to do this effectively within Christian schools.

Unless, that is, the interpretive direction described here is faulty. It is possible that the teachers trained from a Christian perspective have a positive socializing effect on teachers who

graduate from secular teacher training institutions. Nasser-Abu Alhija & Fresko (2010) describe that the new teacher socialization process is characterized by the "the acquisition of knowledge, skills, values, and norms of both the teacher profession and the local school community" and claim that new teachers' "professional beliefs, values, and practices can be greatly affected by the instructional and organizational culture of the professional community that they encounter in their workplace" (p. 1592). The logistics of such a process are differentiated by Podgozinski (2012) as formal and informal induction. He claims that the "socialization of new teachers into the profession and their local contexts often occurs outside of formal teacher induction" (p. 984). His argument is that much of the "more subtle values, norms, and expectations [are] not expressed by formal socializing agents" (991). Consequently, his claim is that new teachers learn more about the underlying attributes of the school through informal means than through formal means. The logical extension of this argument may be that a new teacher in a Christian school, regardless of where he/she graduates, may undergo an informal process of socialization and begin to adopt Christian pedagogical understandings from his/her socialized peers even if he/she graduated from a secular institution. There is no way to substantiate this from the data in the present research study, but this phenomenon should influence future studies aimed at discovering how teachers develop Christian pedagogies and methodologies.

While no significant results were found in the areas that this study aimed to investigate specifically, some other interesting results were uncovered. For one, male teachers were rated more poorly by their principals in terms of their overall pedagogical performance and classroom management than their female counterparts. Other studies have set out to explore this idea with mixed results. Ehrenberg, Goldhaber & Brewer (1995) were in the minority in finding no effect of gender on teacher performance when student achievement was the indicator. They found that

gender did not affect student learning in four subject areas in 8th and 10th grades. Most, however, found that gender of the teacher made some difference. Among those finding that male teachers taught students that performed more poorly on standardized tests were Burusic, Babarovic & Seric (2011), and Krieg (2005). Others found that female teachers performed more poorly when achievement of students was considered. Autecol, Eren & Ozbeklik (2012) found that having a female teacher had a negative impact on math tests of female students while Chudgard & Sankar (2008), found that female teachers were better teachers of language, but not math.

The survey used in this experiment was vague in its description of overall pedagogical performance (PP1) so it is not possible to identify the specific pedagogical and methodological areas that male teachers would have been rated more poorly in. It is clear, based on the results of other researchers and the results from this experiment, that differences between female and male teachers can be expected. Since research results differ and the results herein are vague, it would be advisable that principals and others use this information cautiously when hiring teachers and when assessing their performance. The results of this aspect of this study, though, are in-line with the findings of other studies of a similar nature.

Another interesting finding of this study is that teachers with more than 3 years of experience were rated more highly by their principals in the measure for overall Christian perspective (CP1) which was intended to measure the principal's overall perception of the teacher's ability to integrate a Christian perspective in their teaching. Many researchers have shown a difference between novice and rookie teachers. Nye, et al. found substantial student achievement gains in relation to teacher experience, especially in 2nd grade reading and 3rd grade mathematics. Buddin and Zamarro also noted student achievement gains were noted with increases in teacher experience but found, importantly, that the linkage was due primarily to poor

teacher performance at the front end of their careers. This result was found when years of experience were dichotomized as they were in this study. Clotfelter, et al. (2007), found that most gains in achievement associated with teacher experience happened in the first five years of teaching and that little achievement gain can be associated with experience beyond five years. Rivkin, et al. came to the same conclusion.

It is clear that there are notable and important differences between experienced and inexperienced teachers. Most studies show an effect related to student achievement gains. The effect shown in this study is that teachers with 3 or more years of experience are better able to integrate a Christian perspective into their teaching. The hypothesis of this study was that teachers graduating from Christian training institutions would be better able to integrate a Christian perspective into their pedagogies and methodologies. What is shown here is that years of experience teaching is a greater effect than that gained from a training institution graduated from. This finding is consistent with other studies, but differs greatly in the position of its finding. Others have focussed on student achievement gains; this study focuses on faith perspective which is less easily measured objectively. Nonetheless, for those in Christian schools this is an important finding: Christian training institutions may not be enough to enable teachers to effectively integrate a Christian perspective into their teaching. It is unclear from the findings whether the increased ratings in this area for experienced teachers is due to individual practice, to training mechanisms put in place by principals, or to the socializing effect of tenured teachers on non-tenured teachers. One principal asked the following question:

> *"Many of us have taken additional courses, in part, to compensate for the lack of Christian worldview in our educational background. I wonder if that might have any bearing on the conclusions."*

This is a good question for which this study doesn't have a definitive answer. What is clear, however, is that experienced teachers are rated more highly in regards to their ability to integrate a Christian perspective into their teaching. Because of this, it is advisable that principals provide opportunities for all of their teachers to build their skills in Christian perspective integration, no matter what teacher training institution he/she graduated from.

Limitations of the Study

It is realized that there are important limitations of this survey and study. For one, the significant results that were found were representative of less than half a scale point on the continuum used. In a real-world situation, it is uncertain that such a difference in rating between segments of a population would 'feel' significant. For example, it is doubtful that a principal would consider an average rating of 8.0 for a male teacher to be significantly worse than an 8.4 rating for a female teacher. It is also recognized that this study is limited in its scope by not using any student achievement data in its analysis. To further the work done here, future studies could incorporate some measure of student achievement data to ascertain a further correlation between pedagogical effectiveness and teacher gender, especially within Christian schools.

One principal made an important note regarding the student impact on teacher effectiveness:

> *"As I am filling in the survey, one variable for which there is no accommodation is that of students. Their deportment and the class personality can impinge on the goals the teacher may have. Some of my best teachers are unable to be the best they can be due to the nature of the class or individuals in the class. Even the best teachers I have can be drawn away from instructional excellence by the group they are called to teach. Each class is different!"*

Although many of the studies cited in the conceptual framework outlined some of these concerns, this study makes no such allowance for any of these variables.

Conclusion

Although the research aiming to assess the effectiveness of teacher preparation programs has been divided in its conclusions, the philosophy behind the studies is sound: high quality teachers are integral to building high quality schools. The motivation behind teacher training programs is to train high quality teachers. For this reason, it is prudent to design methods to assess the effectiveness of teacher training programs. Many studies have tried to do this by linking student achievement data to individual teachers, thus enabling the researcher to gauge the effects of teacher training programs on student achievement, which is a primary facet of high-quality schools.

This study recognizes that there are many facets of high-quality teachers that cannot be measured by student achievement scores alone. In Christian schools, teachers are expected to integrate their Christian perspective into their teaching. Christian teacher training programs are seen as an important part of helping Christian school teachers to do this well. By scaffolding on the work of Jacob and Lefgren, and Rockoff and Speroni, this research study used principal perceptions of teacher effectiveness to aid in developing an understanding of the relationships between teacher effectiveness and teacher training programs. Through the use of the instrument herein it was shown that there was no identifiable difference between those teachers graduating from Christian and those graduating from secular universities. Some significant results were determined relating to teacher gender and teacher years of experience that may have an impact on principal and school practice and policy, however, it cannot be stated from this study that principals should discern the future quality of teachers by place of credentialing alone. It may be

worthwhile to pay close attention to years of teacher experience and gender in some contexts, but principals and hiring committees should avoid any bias that favours one institute of teacher certification over another.

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Appendix I: Pre-Survey Letter to Principals

September 9, 2013

Dear Principal,

I hope that you have begun your year with a renewed energy and that all the plans for the new year have progressed without issue. I am writing you today to ask for your help in completing a research project that I am undertaking. As a principal, you are no doubt a good evaluator of effective teaching. As a principal in a Christian school, you have the additional qualification of being a good judge of excellent Christian teaching. In this research project I am hoping that you will put those skills to use in completing an online survey.

Through the research that I am doing as part of my Masters in Educational Leadership at Calvin College, I am collecting data that will help in uncovering the relationship between effective teaching and teacher preparation programs. By doing this, I hope to learn more about what factors contribute to quality teaching in two categories: pedagogical performance and Christian perspective. Your efforts in helping me will add to our knowledge of the Christian schooling enterprise, and I am hopeful that the results will help us to make Christian schools places where we can raise up responsive disciples of Christ.

In roughly two weeks you will receive an email from me with a link to a survey. You will be asked to complete a few questions about your school, but will not be asked to provide any personally or professionally identifiable information. You will also be asked to provide a list of your teachers, without names, their gender, years of experience, and university of teacher training. You will then be asked to provide an informal and subjective assessment of their effectiveness in terms of pedagogical performance and Christian perspective. If you are the principal of a large school, I expect the survey to take you approximately 30-40 minutes to complete. I would be appreciative if you would complete it within 2 weeks of receiving it.

All of the responses will be anonymized and held in the strictest confidence. The only people who will see the raw data are the data calculators, my advisor in the Educational Leadership program, Dr. Al Boerema, and myself. Each of these people will sign a confidentiality agreement. Again, you and your school will not be identified in the data. The ongoing work and process will be shared with a few of my classmates who are also undertaking research projects. I hope to be done the analysis by May 2014 and I promise that you will receive an executive summary of the results shortly thereafter.

Thank you in advance for your participation in this. I hope that the process and the results can be a blessing to us in our work as Christian educational leaders, and ultimately to God.

If you have any questions or concerns, you may contact my advisor by email at ajb37@calvin.edu or by phone at 616-526-6036.

In His Service,

Paul Marcus
pam9@students.calvin.edu

Appendix IIa: Christian Perspective Rubric				
Component	**Unsatisfactory 0-2**	**Basic 3-5**	**Proficient 6-8**	**Distinguished 9-10**
CP#1: Overall Christian Perspective				
CP#2: Creating an Environment of Respect and Rapport	Classroom interactions, both between the teacher and students and among students, are negative, inappropriate, or insensitive to students' cultural backgrounds and are characterized by sarcasm, put-downs, or conflict.	Classroom interactions, both between the teacher and students and among students, are generally appropriate and free from conflict, but may be characterized by occasional displays of insensitivity or lack of responsiveness to cultural or developmental differences among students.	Classroom interactions between the teacher and students and among students are polite nurturing and respectful, reflecting general warmth and caring, and are appropriate to the cultural and developmental differences among groups of students. Students are encouraged to be responsive disciples of Christ. (Students are encouraged to put into practice God's command to love Him our neighbour and ourselves.)	Classroom interactions between the teacher and individual students are highly respectful, nurturing and developing genuine warmth, caring and sensitivity to students' cultures and levels of development. Students themselves ensure high levels of civility among members of the class. Students are strongly encouraged to be responsive disciples of Christ. Students encourage each other to be responsive disciples of Christ.
CP#3: Engaging Students in Learning	Activities and assignments, materials, and groupings of students are inappropriate for the instructional outcomes or students' cultures or levels of understanding, resulting in little intellectual engagement. The lesson has no structure or is poorly paced. . No connections between faith and learning are evident.	Activities and assignments, materials, and groupings of students are partially appropriate to the instructional outcomes or students' cultures or levels of understanding, resulting in moderate intellectual engagement. The lesson has a recognizable structure, but that structure is not fully maintained. . Students are rarely invited to see connections between faith and learning	Activities and assignments, materials, and groupings of students are fully appropriate for the instructional outcomes and students' cultures and levels of understanding. All students are engaged in work of a high level of rigor. The lesson's structure is coherent, with appropriate pace. . Students are occasionally invited to see connections between faith and learning	Students, throughout the lesson, are highly engaged in significant learning, and make contributions to the class activities. The lesson is adapted as necessary to the needs of individuals, and the structure and pacing allow for student reflection and closure. Students are consistently invited to see connections between faith and learning.

Appendix IIb: Pedagogical Performance Rubric				
Component	**Unsatisfactory 0-2**	**Basic 3-5**	**Proficient 6-8**	**Distinguished 9-10**
PP#1: Overall Teacher Effectiveness				
PP#2: Classroom Management	Much instructional time is lost because of inefficient classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties.	Some instructional time is lost because classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties are only partially effective.	Little instructional time is lost because of classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties, which occur smoothly.	Students contribute to the seamless operation of classroom routines and procedures for transitions, handling of supplies, and performance of non-instructional duties.
PP#3: Demonstrating Knowledge of Content and Pedagogy	The teacher's plans and practice display little knowledge of the content, prerequisite relationships between different aspects of the content, or the instructional practices specific to that discipline.	The teacher's plans and practice reflect some awareness of the important concepts in the discipline, prerequisite relationships between them, and the instructional practices specific to that discipline.	The teacher's plans and practice reflect solid knowledge of the content, prerequisite relationships between important concepts, and the instructional practices specific to that discipline.	The teacher's plans and practice reflect extensive knowledge of the content and the structure of the discipline. The teacher actively builds on knowledge of prerequisites and misconceptions when describing instruction or seeking causes for student misunderstanding.

Appendix III: Principal Survey Screenshot