

OBSERVATIONS OF TEACHER EXPERTISE BEHAVIOR BASED ON A  
CHECKLIST DEVELOPED FROM STUDENT PERCEPTIONS

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by

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## ABSTRACT

Exploration into teacher competency of various types has gone on for quite some time. An untapped resource regarding teacher expertise is that of the students' perceptions of teacher expertise, particularly the ability of students to identify the types of behaviors that expert and non-expert teachers exhibit in the classroom. The frequency and variety of expert behaviors in the high school classroom were investigated in this study. High school teachers ( $n = 25$ ) were observed during regular class periods using the Teacher Behavior Checklist, a checklist of behaviors developed for this study from discussions with high school students, teachers, administrators, and existing teacher competency literature. Results suggest discrimination of expert and non-expert teachers similar to Berliner (2001). Agreement among students' perception of expertise, classroom observations, and the literature suggest that high school students are capable of accurately identifying expert and non-expert behaviors of teachers. Further, some data suggest that expert teachers draw from a narrower behavioral scheme and exhibit expert designated behaviors more often than do their non-expert colleagues. This study highlights the need to close the evaluative loop through the utilization of student perception.

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## DEDICATION

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## CHAPTER 1

### INTRODUCTION

In most domains it is easier to identify individuals who are socially recognized as experts than it is to specify observable performance at which these individuals excel. The distinction between the perception of expertise and actual expert performance becomes increasingly important as research has shown that the performance of some individuals who are nominated as experts is not measurably superior (Ericsson & Charness, 1994, p. 731).

Rooted in the Expertise<sup>1</sup> model established by K. Anders Ericsson and Neil Charness (1994), this study is designed to examine the occurrence of Expert behaviors in the classroom as defined by disparate sources. Criteria from established teacher excellence literature as well as data gleaned from interviews with high school students, teachers, and administrators were used to create the Student Descriptor tool to quantify Expert behaviors during classroom observations. As summarized by Palmer, Stough, Burdenski, and Gonzales (2005), there are various criterion-based definitions for teacher expertise. My aim in this study was to quantify the frequency of expert behaviors in observed classrooms to reveal which criteria among expertise measures suggest agreement or disagreement. By including indicators of expertise as reported by high school students I hope to make inroads regarding a case for the inclusion of student perception in teacher expertise assessment.

Expertise is defined as the demonstration of superior performance within a formal domain, one that may be typically academic or career-oriented; or informal domain, one that may be categorized as more or less a hobby. Through deliberate practice and improvement under the advisement of a mentor, an Expert develops skills and behaviors over ten or more years that exceed those of peers within that domain. Expertise in an area

<sup>1</sup> The uppercase 'E' is used throughout in reference to Expertise Theory. The lowercase 'e' is used throughout in reference to expertise in general.

is not simply a matter of greater knowledge, but also of physiological change (Ericsson, Roring, & Nandagopal, 2007). Through use, an expert may develop physical changes—such as a pianist whose fingers conform more exactly to the shape of the instrument; as well as neurological changes. The Expert mind becomes more efficient in managing the vast knowledge that is categorized and accessed in ways different from that of the novice and experienced non-expert. The novice is not a ‘blank slate,’ rather, a prepared beginner; the experienced non-expert refers to an individual who is beyond a novice and may be well established within the range of competence.

Some of the earliest research regarding expertise sought to discover the reason that some participants in a given field became experts while others did not. In examining the discriminating factors among experts and non-experts, patterns emerged revealing common avenues to expert level performance. In educational realms, Expertise has become a topic of interest both in the development of curricula and in the development of career-oriented practice and preparation programs.

The concept of the master teacher is one that has been used colloquially over the past forty years. The commonly seen and subscribed pamphlets of Robert L. DeBruyn called *The Master Teacher* have been mainstays in faculty rooms since they were first published in 1963 (The Master Teacher: About us, n.d.). The aim of this monthly periodical is to deliver professional development in small bites to encourage the teacher to improve techniques in a variety of areas such as classroom management, lesson planning, mentoring, and inclusion. Anecdotally, this is one of the more familiar sources of the term master teacher. Beyond the encouragement of such sources to remain dedicated to growth, development, and reflection in the field of education there is little

research devoted to the topic, particularly to the establishment of standards for purposes for such an indication. Suggested purposes of master teacher identification are to select teachers for rewards and thereby foster retention in the profession (Sparks & Lipka, 1991). Literature from the National Education Association suggests that the development of teacher mastery mirrors the Expertise theory literature and adds that, in addition to the content mastery, ten years of experience, and teacher preparation, an educator should also have a depth of understanding of students as “the complex human beings that they are” (Ambrose & Bridges, 2005).

In the domain of teaching, there is a noticeable disparity in the various criteria that have been proposed to measure the attainment of expertise (Palmer, Stough, Burdinski, & Gonzales, 2005). Nominations by supervisors, length of stay in current school, acting as cooperating teacher, and/or other forms of social nomination are just a few examples of the possible criteria that determine the attainment of expertise in teaching. Perhaps most noticeable is the absence of student perception in the assessment of teacher expertise.

In this research study, I observed the classroom behavior of several teachers during full class periods of about 45 minutes. I then compared self-reported expertise criteria, principal/supervisor reported criteria, and the measure of demonstrated behaviors in the classroom. Also examined were the varieties and frequencies of behaviors exhibited among the teachers within the high school divisions.

#### Statement of the Problem

In order to create a viable Expertise model that is suitable for classroom use, I considered the different perspectives in the literature regarding the observation of expert

performance. In doing so, the focus shifted away from the students and toward the teacher. In whose perspective is it more important for a teacher to be perceived an expert? A teacher who is perceived to be an expert by administrators may not be perceived to be an expert by students. Likewise, an educator who may be nominated an expert by students may not have that same regard by that teacher's colleagues or superiors. My experience as a student and as a teacher caused me to consider the range of reactions by students, in terms of effort and outcomes, in the presence of an expert teacher. Another consideration is whether or not students are able to perceive the different levels of teacher expertise—novice, experienced, and expert—in the same manner as adults in the context of the learning environment. If the effort levels and outcomes of the students are different in the presence of teachers perceived to be of different skill levels, this is surely a worthwhile investigation.

Expertise theorists seek to create a broad definition of expertise that is applicable to multiple domains. This level of attainment requires the acquisition of skill sets and physical adaptations with “important implications for our understanding of the structure and limits of human adaptation and optimal learning” (Ericsson & Charness, 1994, p. 724). It is my contention that this general theory of expertise sought by these authors undermines the domain-specific tenet of Expertise Theory. Aspects of Expertise that are common to all domains cannot adequately describe the intricacies of expert acquisition or predict expert performance within each domain. In a 2001 study designed to discriminate the characteristics of teachers on levels from beginner through expert, Berliner (2001) found remarkable results with his content and context specific methodology. By placing participating teachers into various contexts such as extemporaneous lessons with brief

planning periods, Berliner (2001) was able to describe characteristics of teachers in five stages of expertise. Each of these stages was characterized by distinct actions, attitudes, and behavioral responses to the various contexts presented to teachers in the study.

Berliner made advances in discriminating among teachers and categorizing levels of expertise through the identification of specific behaviors.

Considering that expertise is achieved over many years and thousands of hours of domain specific application (Ericsson & Charness, 1994), it is my assertion that general theories are not a reasonable goal in the exploration of optimal performance in any domain, including specifically teaching expertise explored in the current study.

Student perception of teacher expertise is not an approach that is included in the current teacher expertise literature. When prompted in the Study One discussion that I held in April of 2006, one-on-one interviews, and small group settings, students produced descriptions and listed behaviors of novice and expert teachers that were consistent with the competency and expertise literature. This suggests that there is a tacit pool of expert criteria for teachers that is common among cohorts in the educational context. Further, data from the first iteration of the study suggest that students are more likely to categorize certain behaviors as ‘novice’ or ‘expert’ than are adults.

It is worth including participant perceptions of expertise into the overall concept of expertise. While Ericsson and Charness (1994) seek to differentiate what they would call the subjective perception of expertise from what they would term objectively measureable components, it is precisely the expert behaviors in the classroom that create this perception. If, then, these crucial behaviors can be identified, can the component of perception be controlled? Consider the ‘experts’ that have been studied: Hill and

Schneider (2006) tell of the cab driver who knows all of the quickest routes in New York City; deGroot (1968) describes chess masters who recall thousands of chess moves and piece placement. There are issues of perception in both of these situations. Surely the fare in the expert's cab considers the driver an expert if he chooses the best routes and the chess master is an expert in the eyes of the defeated opponent or the audience observing the victory. Reported inconsistencies in the performances of experts in experimental trials suggest that there may be more to the picture of expertise than simply performance outcomes. Expertise, then, applied to the context of education may have the same inconsistencies in performance indicators. In the case of the chess master, for example, the master has a definite stake in success as the outcomes are clear and have a direct effect on the practitioner. The case is the same regarding the expert cab driver who receives a direct gain in the form of continued employment, increased tips, and satisfied customers. In the case of education, the student is the consumer rather than the practitioner; potential variables for expertise studies, in terms of grades, may be distorted because they are calculated by the teacher with potential job security at risk.

#### Purpose of the Study

Although my overview of student perception is borrowed from the teacher competency literature, my aim is to use only what advances an approach to expertise through the measurement of student perception in the evaluation of teacher expertise. This contextual examination of the novice/expert perception of teachers by students places the need for expertise where it belongs—on the shoulders of trained professionals who are expected to develop their skills over time. One of the overarching questions

guiding this inquiry is whether students perceive teacher expertise differently from adults and, if so, whether this perception influences the learning process and outcomes.

This study has four primary goals. First, this study seeks to determine the viability of high school student perceptions as an evaluative factor regarding the expertise of teachers. Second, this study aims to discover agreement or disagreement among disparate criteria for determining expertise in teaching. The third objective of this study is to determine the frequency of student-described expert behaviors demonstrated in the classroom by teachers. Based on these findings, I conclude with recommendations of behaviors for inclusion into the behavioral repertoire of teachers to improve efficacy in the classroom based on formal or informal feedback received (Buskist, Sikorski, Buckley, & Saville, 2002). It is one of my assertions that teachers can learn to project their expertise in the classroom in order to improve overall outcomes.

#### Significance of the Study

Developing an evaluative tool for teacher expertise based on student perception opens doors for development in numerous areas. Through the identification of behaviors that indicate expertise in the eyes of the students, teachers may begin to adopt classroom routines and habits that allow for improved educational experiences. Giving students the ability to provide input and insight into teacher evaluation creates the possibility for increased student engagement due to the appropriate empowerment of the student body. The students may be able to convey their thoughts regarding important factors in their education thus providing a level of communication that does not currently exist in the grade school setting. The completion of the evaluative circle is a necessary one and a gap

may be filled by allowing the students the opportunity to report on educational practice from their perspective (Kearney, Plax, Hays, & Ivey, 1991; Myers & Bryant, 2004).

By exploring the behaviors that students perceive as functions and indicators of teacher expertise, or lack thereof, I can begin to examine the relationships among student perception, student/teacher outcomes, and professional/inter-collegial perception.

The issue of reciprocal causality in this area is one that is currently untouched by current research and this study may set the stage for this level of inquiry. The interaction of teacher expertise and student perception of teacher expertise is interesting and raises questions of interactive agency in the classroom as described by social cognitive theory. As both the student and the teacher exert environmental influence within the classroom, they also contribute causally to the work of each party outside of the classroom (Bandura, 1989). The effect that this interaction may have on the performance of the teacher and the students suggests a dynamic and complex relationship that is worthy of exploration.

#### Research Questions

1. Is there a difference among observed teachers in the frequency and variety of expert behaviors demonstrated in a class period?
2. Is there a difference among teachers indicated as experts according to existing criteria, nominated as experts by their supervisors, and those indicated as experts according to behaviors observed in class using the Student Descriptor tool?



## CHAPTER 2

### REVIEW OF THE LITERATURE

#### Historical Background

In 1899, the work of Bryan and Harter (1899) in the training of telegraphers brought about new ideas regarding expertise. They centered their theory of expertise around three components: practice, organization, and automaticity (Berliner, 1994). As with current expertise research, Bryan and Harter (1899) sought to “discern...the chief subjective effects of mastering an occupation” (p. 348) through the identification of principled, hierarchical habits. These habits are specific to the content area and develop along planar taxonomies. Through interviews, it was discovered that automaticity is where freedom lies in this field; once telegraphers achieved a level of automaticity, the telegraphers could focus on the message being conveyed rather than individual letters or words that were basic components of the message. The conclusions of Bryan and Harter’s research suggests that other subjects should be similarly examined in order to discover the most important “league stepping” habits that would facilitate freedom through education. This examination of purposeful mastery within a specified discipline was left untouched for some time.

*Personal knowledge* by Michael Polyani, published in 1958, delved into the concept of tacit knowledge which he defined as the deep pool of knowledge that is embedded in everyday life. This knowledge determines what we recognize and fail to recognize, how we evaluate, and the method that we utilize in approaching tasks. It was in this volume that Polyani (1958) appeared to reference the core of Bryan and Harter’s 1899 research stating that once contextual confines of a domain were mastered, there was

freedom from the rules of that domain (Polanyi, 1974). This is not competence, but understanding. It was not until the mid-1960s that these topics were visited with vigor.

The 1960s brought about a changing climate of psychology opening the door to new concepts in learning and education. Specifically, psychology was moving away from behaviorism. A 1965 book by Anton deGroot titled *Thought and choice in chess*, which explored the expertise of chess players, was translated into English and quickly became an influential work. This book addressed the ability of some chess players (masters) who were able to win tournaments while others (novices and amateurs) were not. The translation of this book into English along with the shifting focus of psychology (Dalton & Evans, 2003) coincided with the landmark works of Newell and Simon (1972). The artificial intelligence roots run back to the 1958 Logic Theorist research of Newell and Simon at Carnegie Mellon University (Garnham, 1988). Information Processing theory, championed by Simon and Newell (1971), had commanded some attention with its implications of artificial intelligence. Can a computer be programmed to think and “act” like a human? Can this be used to explain the way humans think and the behaviors they exhibit? While computers may be programmed with tremendous amounts of information, Expertise is more complex than the amount of information possessed by an individual.

Expertise theory is not based upon the simple fact that experts possess more knowledge than the novice. The expert possesses greater knowledge and organizes it in qualitatively different ways from novices (CTGV, 1996, p. 816) due in part to the greater amount of experience that the expert has had. The expert can then access that knowledge and analyze problems in ways superior to the novice or experienced amateur.

Domain specificity is one dimension of expertise theory. Experts are defined as those who “master (a) large, well-organized, and flexibly accessible domain-specific knowledge base” (DeCorte, Greer, & Verschaffel, 1996, p. 504). Experts are typically masters of only one domain in which they have this level of knowledge and ability. It was at one time thought by theorists that experts in, say chess, were also experts in other areas; it has been demonstrated that experts are usually experts in only one domain (Berliner, 1994; Chi, Glaser, & Farr, 1988; Ericsson & Charness, 1994; Glaser, 1987).

Problem solving for the expert is a process different from that of the amateur. deGroot (1965) reported that chess experts had seen and studied, literally, thousands of chess boards and games in the course of training. Drawing from an expanded memory and memory filing/retrieval capacity, the ability of these masters to recognize patterns was keen. This type of ability is observed today in experts who, when approached with a problem in their domain, need only to draw upon their principled memory of stored patterns to solve problems with familiar ease. An expert may spend more time to assess situations than an amateur or novice, but will prove to be correct more quickly either due to the lack of error or simply by manipulating variables mentally rather than physically, which is more typical of the amateur (Berliner, 1994; Ericsson & Charness, 1994)

Mentors, or coaches, are those who direct the study and practice habits of experts and budding experts. These individuals may be experts themselves or teachers who have produced experts in the past. The role of the mentor in the training of the expert is not a role that is clearly defined within the literature. Ericsson and Charness (1994) depict typical coaches as those who “monitor training programs...” that are “tailored to the needs of individuals ranging from beginners to experts” (p. 738).

Encoding is typically defined as the storing of chunked representations in short term memory. In terms of the expert, encoding is more like the shorthand language of the domain. Take music as an example. The beginning pianist looks at every note on the page checking the range and duration. The student then checks for any accidentals and for position, anticipating any shifts in position. The expert pianist looks at the page and takes notice of those things that are out of the ordinary. An expert is quickly able to take in a full page worth of information. This is because of the ability to encode the information; there is a vast amount of information that can be maintained (chunked) in the (expanded) short term memory. Principled knowledge provides rules for discrimination among tasks so that relevant information may be addressed while expert level template usage allows the expert to encode one larger group of artifacts about a situation rather than several individual items. In short, the expert sees a page full of similarities with a few differences that need attention; the novice sees hundreds of pieces of information and has to address each one as it comes (Gobet, 2005).

Expertise theory accounts quite well for the nature of knowledge in regard to the expert. The stored knowledge of patterns is one aspect of expert knowledge that is well supported by the literature, particularly the domain of chess. Another outcome of this research is the specification of principled knowledge that has many implications. Principled knowledge accounts for the expert's remarkable ability in one domain that may not be transferable to other domains. In approaching a situation or problem, the expert understands the contextualization of the variables due to an understanding of the rules, or principles, of the domain. This domain-specificity is in contrast to other

developmental theories involving generalized knowledge and skill acquisition such as that of Piaget (Byrnes, 2001).

Expertise theory does an excellent job of outlining the memory features of the expert primarily due to its foundations in Information Processing theory. The functions of memory in Expertise theory build on those delineated in Information Processing theory where there exists a sensory store, short-term memory (STM), and long-term memory (LTM). The literature suggests that experts possess these features but have different methods of encoding information and accessing this memory than the novice and amateur (Byrnes, 2001). The memory aspect of this theory is one that has been most successfully documented throughout the literature due to the nature of the studies. The process of encoding allows the expert to look at new situations with deep understanding because the expert has a method of analyzing relevant features of a situation while noting incidental changes that are different from expectation or memory. The expert's expanded memory allows for manipulation of new variables framed in experience.

The inclusion of what Ericsson and Kintsch (1995) call long-term working memory (LTWM) was a welcome step. According to Ericsson and Kintsch (1995), LTWM is a component that "is acquired in particular domains to meet specific demands on storage and retrieval that a given activity imposes" (p. 14). Long term working memory accounts for information that has not been encoded into long term memory, but can be activated through retrieval cues. The work of Fernand Gobet (2000a, 2000b, 2005) is impressive in its description of various methods of memory retrieval and storage. Gobet (2000a) in his response to Ericsson and Kintsch's (1995) LTWM challenged some of these memory definitions of Expertise and makes it clear that the expert not only

chunks memory but encodes entire templates allowing the expert player to discriminate among the available information presented. Rooted in Information Processing theory, Gobet's (2000a; 2000b) analysis and rebuttal bolsters Expertise theory by helping to identify differences in the details among experts as well as between experts and non-experts in their facility with memory.

### Measurement of Expertise

The first step in the measurement of expertise is to design a task or tasks that are representative of the core competencies within a given domain (Chi, 1978). The problem with this is that there is a lack of representative tasks. More correct may be that a pool of representative tasks for each domain of potential expertise does not exist. Most of the current measures of expertise consist of types of memory tests which have some relevance to the teaching realm but fail to capture the nature of expertise.

Difficulty in capturing real life expertise is revealed in the stages of developing the tasks themselves. Finding standardized situations in which superior performances may be observed is an unlikely one (Ericsson & Smith, 1991). Further, developing a standardized and acceptable set of stimuli to evoke superior performance may produce convolutions that cloud results. In the attempt to define a general theory of Expertise many tasks have been variations of tests of memory.

The early observations of expertise were centered on chess experts. These experts were able, in various trials, to look at chess boards set up in various stages of a game and memorize the placement of all the pieces on the board. Other tasks required the chess masters to calculate permutations of the next move that would provide the best opportunity to win the game, predicting opponents' moves, and speaking aloud during

matches. (deGroot, 1968; Gobet, 2000b). Outcomes of these tasks were interesting when the pieces were arranged on the chess board randomly. In these cases, the experts were no more likely to correctly remember the piece placement than the novices. This is a test of memory demonstrating that chess experts are different in their ability to memorize pieces placed in purposeful positions versus those placed randomly. The novices in this example acted as a control group in a test of memory. Have the theorists reduced this game to one of memory? While this form of measurement may be suitable for a chess expert, it is unlikely that it would meet the expectation for other areas of expertise. A suitable set of representative tasks that are applicable to all experts is unlikely.

In terms of teacher expertise, there have been few attempts made to assess expertise. Berliner (1994) described three such scenarios in which expertise assessment was studied. One scenario placed teachers in the situation of having to develop a class within a short period of time and then execute the plan immediately afterward. In a second study, teachers observed slides of classrooms and brief video recordings of classroom situations and were given an opportunity to contextualize what was observed. Another study asked teachers to predict student responses and reactions to items from a standardized test of learning progress. In each of these instances, there existed discriminating factors among the participants but the question remains as to how indicative these tasks may be in terms of determining expertise rather than simply classifying participants as more or less expert.

#### Practice, Interest, and Motivation

The role of deliberate practice is an interesting one as it is influenced by the self-regulating factor of motivation. Deliberate practice is consists of activities performed

between meeting with mentors or teachers that produce maximum improvement at every level (Ericsson, Krampe, & Tesch-Römer, 1993; Gabrielsson, 2002). The literature does not clearly articulate the content of deliberate practice, though it is suggested by some authors that it is more or less rote procedure (Langer, 1998). Anecdotal information regarding the content of practice among experts tends to be unreliable and difficult to substantiate. Langer (1989) warns against the mindless expert who ‘practices’ without focusing on the task while doing mundane things like watching television. Such is the case of an interview with Langer, discussing the practice habits of expert musicians. In a 1998 interview from Lincoln Center, Langer remarked that experts must continue “practicing mindfully versus rote repetition.” In that same interview, Dr. Langer also joked about Isaac Stern and his habit of practicing while watching television suggesting the necessity of physical exercise as well as part of deliberate practice. The subject of motivation is one that is sometimes acknowledged, but not quantified in the literature (e.g. Schofield & Hotulainen, 2003). Ericsson, Krampe, and Tesch-Römer (1993) exclude performance and compensated activity as deliberate practice as optimal performance is expected in those situations. If the act of teaching does not qualify as practice, it may be worth questioning when and where deliberate practice for the teacher takes place.

The Model of Domain Learning (MDL) described by Alexander (1997) indicates three stages of expertise: acclimation, competence, and proficiency/expertise. Acclimation is defined as the stage in which an individual has acquired a level of domain specific, principled, knowledge that is somewhat fragmented and rigid. The acclimating individual has learned the necessary components of a domain but has not yet developed



the discriminative abilities to address specific situations without sifting through the acquired knowledge. The Competent individual is one who has added knowledge to the acclimation stage and has transformed the rigid and somewhat scattered components of information into a “more principled and more cohesive...structure” (Alexander, 2003a, p. 14) through the participation in strategic processing. The developing expert has, at this level, become more automatic in the chosen domain and has developed fluidity similar to that described by Bryan and Harter (1899). This level is also marked by an increase in individual interest with a similar increase in motivation as the individual becomes more independent. The proficient/expert individual is one who has developed many of the typical expert components such as “rich and principled knowledge, effective and efficient use of strategies” (Alexander, 2003a, p. 15; Chi, 1988; Ericsson, 1996; Glaser, 1985) as well as the addition of motivational components of “a personal identification and investment in the domain” (Alexander, 2003a, p.15).

This MDL approach regards interest as an essential component in its development and nurturing of expertise. Situational interest is necessary in the early stages of expertise development and may lead to individual interest. Individual interest represents a long-term investment or deep-seated involvement in the domain of the developing expert. Alexander (2003a) further asserts that motivation is an essential area for further investigation regarding the roles of the teacher as well as the student. It is recommended that the teacher create opportunities in the classroom for situational interest while making inroads into areas of the students' individual interest. In the article, *Can we get there from here?* Alexander (2003b) states, “each stage (of expertise) is represented by different interrelations among individuals' knowledge, interest, and strategic processing”

(p. 4). Alexander's (1997) Model of Domain Learning is one approach that most clearly addresses the components of interest and motivation and the effect that these components may have on practice and achievement.

The concept of meaningful practice, then, begins to take on a level of individuality as to the "meaningfulness" of an exercise. A student will arrive at an individual conclusion at the close of such a practice session. In the case of education, a pre-service teacher in a practicum scenario, a student teacher in a placement, or an in-service teacher in a reflective practice may conduct this practice. This may be one way to account for individual differences among potential experts or the failings of some despite going through all of the typical "expert preparation" methods. These differences may also point back to the mentor, who is to guide the content of these sessions. Langer (1997) warns of the mindlessness that may come from repetition. Her later research on pianists suggests that purposeful, variations on methods of practice encourages "an alert and mindful state" may result in greater enjoyment and creativity in the practicing of a musical instrument.

Ericsson (1996) agrees in his assertion that practice alone is not sufficient in developing expert skills; deliberate practice is necessary for skill development (Amirault & Branson, 2006). In regard to the management of practice, Ericsson (1996) refers to the interaction of developing metacognitive skills and mentor direction in order to "avoid the arrested development associated with automaticity and to acquire cognitive skills to support their continued learning and improvement" (p. 694).

In addition to a representative set of tasks by which to measure expertise, it may be in order to develop a representative 'pool' of practice tasks that are typical among

experts in a given field. This type of discussion brings to mind the automatic nature of expertise addressed by the research of Bryan and Harter (1899). While this may seem to diminish the artistry of music or other arts, reducing them to exercises of mechanical mastery, this may amplify the thought that “automatism is not genius, but it is the hands and feet of genius” (Bryan & Harter, 1899, p. 375).

In the teaching realm, should practice be categorized in the same manner as medical ‘practice’ which is essentially viewed as the life’s work of the medical profession? As teachers are increasingly encouraged to reflect on best practices throughout their days, weeks, and years, Shulman (1986) suggests that the deliberate practice in this realm is one of reflective engagement in career activity which helps to distinguish the craft of teaching from the long-term profession. The ability to reflect, correct, and adapt teaching practices in a dynamic fashion may be considered a component of Expertise in teaching as it is in other content areas. This description sounds more like an expectation of an athlete than an individual in the teaching profession.

According to Byrnes (2001), deliberate practice consists of “focused attention, striving towards perfection, a high level of effort, (and) self-imposed challenges” (p. 79). This definition is clear and concise, but there are numerous definitions found in the literature that range from far-more-vague to overly explicit. Ericsson (1994), in describing training activities designed to achieve expert performance, seems to be addressing rote learning in its role of repetition and successive refinement while somehow incorporating the need to remove improper techniques and ideas. Jorgensen (2003) addresses the quality of practice rather than the quantity. This is an interesting

study considering the amount of statistics devoted to the correlation between hours of practice and expert achievement.

In the process of becoming an expert, domain-specific, principled rules are developed. These rules act upon the experiences of the budding experts, allowing them to perceive situations in specific ways. For example, a chess master has an understanding of the principles behind a particular type of attack and reacts or defends according to the general principles. A novice in the same situation is waiting for a memorized set of circumstances to occur and has a memorized response. The chess master in this instance is able to manipulate variables and process information in a more mature manner. Similarly, in the domain of teaching, a new teacher may develop an elaborate script for a class that is followed very specifically but when questions arise, continues to refer back to the lesson plan rather than adapting. The novice lacks an understanding of the principles of the subject. An expert teacher is able to develop a broad plan for achieving goals in a given period and can react to the context of the class fluidly. Because the principles of the content are understood fully, the expert teacher is able to approach the material in dynamic ways, diagnosing problems in student understanding and adapting as needed. This level of automaticity allows experts to become quick and accurate in the same manner described by Bryan and Harter (1899).

In order for expertise theory to function as a well-defined theory unto itself, it is necessary to supplement the theory with context-specific constructs rather than a general theory of learning. There is a conflict that is inherent in the proposition of a general theory based on the pillars of the theory: Mentoring, Deliberate practice, and Domain specificity. An expert in a specific domain will require a set of criteria for expertise that

is specific to that domain. This is a reasonable assertion that has not been addressed by the literature. Without such resolution, the lack of explanatory and predictive adequacy, as well as an inability to translate into the classroom, may be its undoing. This study, however indirectly, will present content specific criteria to teacher expertise. Such criteria may include items such as teaching without notes or a textbook at hand, seamlessly answering questions on topic and redirecting questions that are off-topic without disturbing the learning process, and managing classroom attention and behavior while remaining engaged with the content.

### Experience

It is accepted that ten years of experience in a domain is a necessary component of expertise. This accumulation of experience alone is not sufficient for the development of expertise (Feltovich, Prietula, & Ericsson, 2006). Beyond the initial period of training and experience, the involvement of deliberate practice plays a more important role in the maintenance of activation of brain activity (Hill & Schneider, 2006). Practitioners such as doctors and teachers, when working in an area that requires dynamic diagnostic reasoning and constant monitoring of environmental variables, amass an incredible number of practical hours in their field.

While the term practice is used most commonly in the medical field, it is my assertion that in the context of Expertise acquisition, this term is pertinent to any of the fields in which the discharging of duties is in the “real world.” While it is expected that a doctor or teacher who has completed a preparation program and the requisite time of residency should be competent to enter into the field, one should not assume that they are fully prepared for the whole measure of the risk that the job entails. This assertion is

contrary to the deliberate practice definitions provided by Ericsson, Krampe, and Tesch-Römer (1993) but may make sense if delimited only to time that is spent in cognitive reflection for the purpose of assessment and improvement of performance (Shulman, 1998; Shulman, 2004).

### Mentoring

Mentoring or coaching is a necessary component of expertise acquisition. The mentor provides feedback and information for thoughtful reflection and adaptation for the developing expert (Ericsson, 1996). The feedback should be timely and allow for times of guided practice in order to make changes with further feedback. This interaction, according to Bullough (1989) sets the stage for an increasing level of autonomy as greater facility in the domain develops.

Glaser (1996) defines three stages of agency as a practitioner develops expertise. The first stage is that of external support. The novice has been trained but is in need of a mediating agent to facilitate the content and structure of the work or task. In most professional realms as well as Expertise theory, this person acts as the mentor. Stage two is the transitional stage in which the mentor withdraws areas of support in order to transfer a greater responsibility to the novice. Finally, Glaser's third stage is that of self-regulation. The individual has not yet achieved expertise, but has moved into a level of trust and comfort in which advice, help, and development are sought rather than given. In order to achieve expertise, a mentor or coach is necessary in order to guide the habits and development of the budding expert.

## Teacher Expertise

The work of Kounin (1970), in identifying teacher behaviors that correlate with success in the classroom, is articulated in a 1970 volume of research. Terms applied to effective behaviors in the classroom such as withitness, overlapping, transition smoothness, and programming have become common terms in the education industry but should be contextualized in order to be best understood. Arguably, the most lasting and novel of these terms is withitness which is defined by Kounin (1970) as “a teacher’s communicating to the children by her actual behavior...that she knows what the children are doing, or has the proverbial ‘eyes in back of her head’” (pp. 79-80). Evidence of this demonstration would be a desist statement that would inform the students that the teacher is aware of unwelcome behavior in the room. Measures of this desist behavior would include clarity of direction and firmness of statement that would produce a response from the students. This seminal work of Kounin (1970) is primarily one of classroom management and provides examples of measureable and observable behaviors that are consistent with current research regarding teacher expertise. Kounin (1970) suggests that educators who are able to handle multiple unwelcome behaviors, a skill called overlapping, are more effective in successfully attributing these behaviors thus causing the intended results.

Dreyfus and Dreyfus (1986) in their book, *Mind Over Matter*, may be the first to discuss expertise in broader terms and particularly in the nomenclature of teaching and learning regardless of domains. The five stages of development in the Dreyfus and Dreyfus (1986) model are suitable for the domain of teaching and utilize excellent examples of principled knowledge development. At the onset of the career, the rules that

the novice follows are specific and rigid; what Berliner (2001) interprets as context free rules. Advanced beginners are those who have become less bound by these rules and have become confined by their context. Competent teachers demonstrate a freedom but are not yet automatic in their dealings with issues and opportunities when they arise. Proficient teachers may refer to the “craft of teaching” or working without a net. They are able to focus on goals rather than rules and may even describe their work as natural. It is not assumed that all individuals, with enough practice and longevity within a domain, will become an expert. This level would be reserved for what Berliner (2001) refers to as the “grand masters...who move to a stage higher” (p. 22).

Berliner (2001), oft cited as a pioneer in the area of teacher expertise, credits Bullough (1989) with the earliest work specifically addressing the transition and contrast from beginning teacher to advanced beginner; novice to expert. In terms of the comparison of novice and expert teachers, Berliner (1994) is likely the first to integrate Expertise theory into the cognitive sciences.

Berliner (2001) describes the stages defined by Dreyfus and Dreyfus (1986) in terms of the career of the educator. At level one, the novice teacher is deliberate. The advanced beginner is considered insightful at level two. The competent performer is described as rational at level three and the proficient teacher is intuitive at level four (Berliner, 1994). It may make sense that many teachers are eligible for tenure by their third or fourth year according to these stages of development. Level five, the expert level teacher, is described by Berliner (2001) as those who “do things that usually work...and go with the flow” (p. 22). When adversity hits the expert, there is remarkable correction and reflection. A departure from the Expertise theory standard, this level is achievable



beyond the fifth year. Experts are recognized by fluidity, performing tasks in a “qualitatively different way than do the novice or competent performer” (Berliner, 1994, p 10). Berliner (2001) goes on to describe the expert teacher in much the same way as experts are described in the literature by Ericsson and Charness (1994).

Berliner’s (1994) work regarding his proposition about the abilities of the situated expert may be the most remarkable. In the course of viewing videotapes of classroom scenes on three screens there were clear differences in the inferential abilities of novice and expert teachers. Experts were most capable of recognizing the correct context of a given situation, picking up on cues that went unrecognized by novice teachers. There were also observations and interpretations of student attitudes regarding the class material and teacher approaches (Berliner, 2001). Berliner (1990) suggests that novice teachers, while they do “possess both energy and commitment...cannot make sense a lot of sense out of what they experience” (p. 29). This research suggests that, paired with planned professional development activities, accurate expectations can be placed on educators across the span of their careers (Berliner, 2001).

In a 1986 article, Shulman makes a statement similar to Berliner (1986). Educational researchers must consider the steps that are necessary to have an individual progress from being an expert student to being a novice teacher. Shulman’s statement comes with a warning that “we assume that most teachers begin with some expertise in the content they teach” (Shulman, 1986, p 8). Like Berliner (1986), Shulman (1986) encourages a method by which to observe and measure this progression.

Shulman (1987) describes three categories of teacher knowledge that combine in varying degrees to create a portrait of teacher competency. Content Knowledge (CK),

Pedagogical Content Knowledge (PDK), and Pedagogical Knowledge (PK) are the three areas that Shulman (1986) distinguishes as measurable components in the practical knowledge of teachers. These categories are, in part, an attempt to address what Shulman (1986) refers to as the “blind spot in regard to content that...characterizes most research on teaching” (p. 7). Shulman’s (1986) suggestion that there has been too much focus on the process of teaching rather than the intersection of content knowledge and skill (p. 8) is a timely one and worthy of consideration.

Content knowledge (CK) refers to the amount of information a teacher possesses within a domain and how that information is organized in the mind of the educator. This includes the ability to access and manipulate that material for teaching. It is expected that teachers be well informed in their domain. Fluency in the concepts that are central to the understanding of the domain are vital so that the educator can define key terms and concepts as well as convey the importance of the material to the students who are studying the subject matter.

Pedagogical Content Knowledge (PCK) may be the most critical for the education of students. This category describes an educator’s ability to navigate what is commonly referred to as the craft of teaching. Educators demonstrate their Pedagogical Content Knowledge through familiarity with regularly taught topics, forms of presentation of material that are effective and useful, analogies that are powerful in creating lasting educational effects on students, and other types of demonstrative methods that support the active teaching process (Shulman, 1986). This area consists of the faculties a teacher possesses “that make it (content) comprehensible to others” (Shulman, 1986, p 18).

Pedagogical Knowledge (PK) describes the curricular familiarity necessary to facilitate effective instruction across the educational career of a student. An educator demonstrates a level of familiarity with the scope of materials and resources that are available for the content area overall. In the same manner that a doctor or pharmacist may be able to call upon a variety of treatments to a disorder based upon the evidence and indications and contraindications of treatments, the educator identifies a “set of characteristics that serve as indications and contraindications for the use of a particular curriculum or program materials in particular circumstances” (Shulman, 1986, p 19) in order to meet educational goals. A practical example is one in which a teacher who knows what was taught in the students’ prior grade as well as what will be expected in the students’ future grade. A teacher who possesses the full scope of PCK may then be best able to provide the appropriate material for the current school year by bridging current content to topics based on prior knowledge which will then connect to future knowledge.

Shulman (1987) offers a variety of observable examples of necessary inclusions in the behavioral repertoire that fit well with this study regarding Expert teachers. “Organizing and managing the classroom; presenting clear explanations and vivid descriptions; assigning and checking work; and interacting effectively with students through questions and probes, answers and reactions, praise and criticism” (Shulman, 1987, p 18) are the types of behaviors that can be observed in the classrooms of Expert teachers. These types of actions all have solid foundations in the body of literature for effective teaching strategies (Shulman, 1987).

Palmer, Stough, Burdenski, and Gonzales (2005), drawing from a variety of teacher expertise criteria, sought to develop a unified description of the expert teacher. For the purposes of this dissertation, six of these sets of criteria have been reviewed for inclusion. Allen and Casbergue (1997) set indices for expertise according to three criteria. Teachers must have completed ten or more years of service, have received nomination of expert by a principal, and participated as a cooperating teacher with a local university. Cleary and Groer (1994) describe the expert teacher as one who has been identified by principals as an expert and has worked as a cooperating teacher with a local university. Experts, according to Moallem (1998) are indicated as teachers who have seven or more years of teaching experience with at least three years at the current assignment, a good reputation with colleagues, excellent regard by the principal, and an undergraduate degree in the content area taught. Strahan's (1989) description of expert teachers requires that principals indicate that teachers possess greater or lesser degrees of expertise and that the teachers are enrolled in a teacher education course. The criteria for teacher expertise in a study by Swanson, O'Connor, and Cooney (1990) include an experience level of approximately ten or more years, being designated as outstanding teachers by their principals, possessing a completed master's degree, and being selection as a mentor teacher. Tochon and Mundby's (1993) expert teachers are defined in their study by criteria that include seven or more years of teaching, supervisor nomination, an M.A. degree in Language Arts, a teaching degree, and tenure. Be it length of service, social recognition, collegial nomination, or educational achievement, there is a general agreement that qualifications exist but each fails to recognize a key component in the educational success: the student.

## Student Perception

In the next few pages, I will introduce an overview of students' perception borrowed from some of the teacher competency literature. It is not my aim to marry Expertise theory to competency, but to borrow what seems to be a usable approach for the study of Expertise through the measurement of student perception in the evaluation of teacher Expertise.

A number of studies in the competency literature have utilized data gained from student perception surveys. This perception of teacher expertise is typically referred to as credibility and draws on a set of five or, in more recent studies, three areas of focus that make up the construct of credibility. It has been generally accepted that positive student perception of an educator's competence leads to positive outcomes for both the student and the educator (Chen, 2000; Myers & Bryant, 2004).

In the context of education there are perspectives on the expertise of teachers that are worthwhile. A teacher who is perceived to be an expert by administrators may not be perceived as an expert by students. In whose perspective is it more important for a teacher to be perceived as an expert? In an initial study discussion group reported in the next chapter, students agreed that teachers whom they perceive to be experts get the best of their work. These students also commented that perceived novices are easily won over in conversations regarding grades and assignments; students admit to doing less than their best work when in a class with a novice teacher for various reasons.

By couching teacher expertise in the context of student perception, there is appropriate reporting from the standpoint of the "consumer." In this business of education, this may be the only inroad for students who wish to have their voices heard.

What other public service industry leaves the consumers without a voice? The voice of the students is left in the hands of the administrator, teacher, or (often disenfranchised) parent. Each of these proxies has a restriction and an agenda that interfere with the message that is conveyed. While one could argue that the student may not know what is best, another could argue that if the hearer knows what to listen for, much could be learned. Would it be easier to train adults to hear students or to train students to speak in a manner that adults can understand? It is this writer's opinion that the teacher and the administrator need only to give the students an appropriate forum in which to present. What can be gleaned from this presentation is unadulterated (literally) wisdom that the student is more than glad to share.

When the topic of student report is addressed, it is often dismissed. Too easily it is said that the student is not capable of judging, or evaluating. Sometimes it is referenced, even if out of context, that the student does not comprehend the outcomes of decisions made in the here-and-now (Sternberg, 2003). However, when the student presents a non-evaluative perception, there is an opportunity for a clearer presentation. The assertion that student perception may hold value is a valid one. This perception of the student is a worthwhile point of departure for teacher development. Research with college students has suggested that the perception of teacher competency is an indicator of future student achievement with their instructor (Myers & Bryant, 2004).

Myers and Bryant (2004) investigated the outcomes due to students' perceptions of instructor credibility. Their conclusions regarding instructor competence were defined in three key areas: expertise, affect for students, and verbal fluency. Expertise descriptors included giving examples, deep knowledge of the material—specifically, memorized

portions from the literature, personal experience that coincides with material covered, and knowledge beyond the literature. College students are regularly polled regarding the capabilities of their professors with the outcomes of these evaluations having some weight, but in the high school classroom there is little-to-no credit afforded the students regarding the assessment of faculty.

Shelton, Lane, and Waldhart (1999) explored the perceptions of second-year and above college students in regard to educator roles in the classroom. Some of the more commonly occurring responses in regard to the expectations of teachers were respect, fair treatment, preparedness, and guidance. Data collected in this study were “rich with student perceptions about the...classroom...grounded in practical experience as...students” (Shelton, Lane, & Waldhart, 1999, p. 408). These researchers further emphasized the importance of perception in their study because of the interactive nature that is often overlooked in education by both the instructors and the students. Failure by both teachers and students to recognize the interdependence of roles in the classroom puts both parties at a disadvantage. Considering this assertion, the integration of student perception into teacher evaluation becomes increasingly vital.

In studies of college professors using measures of student perception, in-class behaviors were reported by students as important in regard to positive and negative teacher perception. In one study, teacher control, student equity, comfortability in the classroom, and supportiveness (Frymier & Thompson, 1992) were among the behaviors that ranked high on students’ lists. In another study, negative behaviors such as easily distracted, unclear lectures, disorganized, unreasonable rules, unresponsive to student

questions, unfair testing, unfair grading, boring, does not know subject matter, and shows favoritism (Kearney, Plax, Hays, & Ivey, 1991) were reported by college students.

Both of the previously referenced studies were performed with college students. It is one of the aims of this study to bolster support for the perceptive abilities of high school students regarding the expertise of their teachers. That is not to say that students should be improperly empowered to critique teachers; rather, colleagues and administrators should be provided with appropriate student-reported evaluations to develop teachers into more effective educators for the benefit of all stake-holders.

When teacher expertise is studied, the context needs to be taken into account. While an educator may be considered an expert teacher in the eyes of an administrator, that educator's colleagues may disagree. Similarly, colleagues may agree on an expert educator, but the students may then disagree. There lies the potential for up to three different levels of evaluation with multiple expectations within each level.

In the planning of expertise observation, existing models are in place for various domains. There are two primary contextual necessities regarding the measurement of expertise. The observation of expertise must occur in the context of real life and the context must contain the appropriate stimuli to evoke superior performance (Ericsson & Smith, 1991). In the teaching domain, there may be no better opportunity than in the course of classroom activity.

Considering the possible convolutions that may occur in the course of supervisory-style observation or even peer-type observation, it is also necessary to expand the observation and data collection techniques. In the interest of a fuller picture, the opinions and insights of students must be sought. The simple fact that a college



freshman is asked, at the close of each semester for each course, to complete a professor evaluation begs the question as to why a high school student is not queried in regard to his or her teacher satisfaction. It was with this line of reasoning that I initiated a focus group with some high school students in the interest of having them provide their ideas about novice and expert teachers, their in-class performance, and honest discourse about navigating the system of secondary education.

## CHAPTER 3

### PILOT STUDY

#### Introduction

Developing a method for examining student perception of individual teacher expertise proved to be a challenging task. In an effort to explore these perceptions, a pilot study (Study One) was initiated which provided interesting results. Students who participated in the group discussion used to gather pilot data were eager to share their thoughts on novice and expert behaviors. At the close of the initial study there were data suggesting that differences existed among students and teachers regarding the categorization of expert and novice behaviors in the classroom. The pilot study also revealed that some of the research questions could not be satisfied by the methodology used, prompting revisions to the method. In the following pages, I have presented a narrative and data summary regarding the pilot as well as the updated methodology and research questions.

#### Study One

##### *Overview*

The first study began with a discussion group at a local North Philadelphia high school to explore the perceptions of high school students regarding novice and expert teachers. Twelve students from grades 9 through 12 participated in this discussion session and completed the Subject Worksheet (Appendix A). Descriptive terms and phrases were compiled from the Subject Worksheet and the discussion session and this led to the creation of the first version of the student perception descriptor survey.

The Student Perception Descriptor survey was then administered to high school students, college students, teachers, and administrators. This first survey aimed to address the following questions:

1. Are there differences among high school students and adults who participate in the Student Perception Descriptor survey?
2. Are there differences among students and teachers in their ability to identify novice and expert behaviors of teachers?
3. Do students adjust their effort based on their perception of teacher expertise?

Assuming that there are no differences among high school students and adults concerning question one, further study would allow the creation of an evaluation tool that can be utilized by students, teachers, and administrators to describe the novice and/or expert teacher. Results of this evaluation would then provide feedback that the observed teacher could use to develop expert teaching behaviors that will produce better student outcomes. If question two confirms that there are no differences between high school students and adults, administrators and teachers will have greater validation for the reports of students in evaluative contexts. Question three is dependent upon a self-report by students and may not affect their final grade in a course.

#### *Discussion Group*

Two students (one male and one female) from the high school student council were chosen to invite students to the discussion session. Students were told in advance that they would be participating in a discussion about their perceptions of teacher

expertise. The discussion was held at dinner time (6:30pm) and pizza and sodas were provided.

While completing the Subject Worksheet (Appendix A), the students spoke aloud among themselves and were animated while discussing the prompts. The students were eager to share responses that they provided on their worksheet and to elaborate upon their descriptions with anecdotes about the characteristics of novice and expert teachers. The Subject Worksheet, supplemented by this active discussion, provided a rich base of material for the student perception descriptor survey. The worksheet then served as the springboard for further discussion as it was reviewed with the group. Very few prompts were required to encourage the students to share their opinions about the behaviors of novice and expert teachers, though they were a bit more interested in discussing the novice teachers they had experienced than the expert teachers. Occasional reminders kept them on task, with all participants taking an active role in the discussion. In all, the discussion lasted one hour and twenty minutes. The discussion was recorded with multiple microphones for future analysis.

Impressively, students in the discussion group provided responses regarding novice and expert teachers that are common in the expertise and credibility literature. Topics mentioned that coincided with outside research included: teacher control, student equity, comfortability in the classroom, and supportiveness (Berliner, 2001; Buskist et al., 2002; Frymier & Thompson, 1992) as well as: easily distracted, unclear lectures, disorganized, unreasonable rules, unresponsive to student questions, unfair testing, unfair grading, boring, does not know subject matter, and shows favoritism (Berliner, 2001; Buskist et al., 2002; Kearney, Plax, Hays, & Ivey, 1991; Shulman, 1987).

Student outcomes need to include a greater set of variables than simply achievement. It may be possible for a novice teacher, with several serious difficulties in the classroom, to fly “under the radar” for some time without having any deficiencies addressed simply by giving high grades and few detentions. In our discussion session, students concurred with the sentiment of one who told the group that he did not mind getting a low grade if the teacher did everything possible and he was not capable of achieving on assessments—the student stated that he could respect the low grade from a good teacher as long as he was learning. Another student mentioned getting high grades from a “novice” teacher that was undeserved and that she did not “really learn anything” in that course. This became a problem a year later when she did not know the material adequately.

Other common sentiments regarding student achievement were discussed particularly the issue of the source of assistance when there is a problem understanding the content. Students in the group stated that when a student is doing poorly, the focus should not be on the teacher or students alone. They would like to have administrators look at the whole picture and take into account what grades are being achieved in other classes, the achievement of other students in the same class, and the point of view of the specific individual. Too often, students say, the focus is too narrowly aimed on one area of achievement when a student earns a poor grade and would like to have it reviewed.

#### *Student Perception Descriptor Survey*

A 100-item survey (Appendix B) was developed based on the frequency and clarity of student responses on the Subject Worksheet and the student discussion. Fifty-five items were predicted to be categorized as expert descriptors, 48 items were expected

to be categorized as novice descriptors, and 3 distracter examples were added. The survey asked participants to place an “X” in the box to tell if a given descriptor indicated that a teacher was (1) Clearly a novice, (2) Possibly a novice, (3) Either a novice or an expert, (4) Possible an expert, or (5) Clearly an expert. The survey was completed by most participants in 10-20 minutes.

The Student Perception Descriptor Survey was administered to three sets of individuals. Twenty-seven students from the same high school as the discussion group students participated in the survey as well as 13 instructional faculty members from this school and 10 students from one university in North Philadelphia. Faculty who took the survey were given a coupon for a complimentary cup of coffee at the school store; students were given a coupon for a complimentary juice or soda.

### *Results*

Table 1 shows a sample of five items from each category ranked by mean. In terms of item category discrimination, items with mean above 3.5 are considered expert and items below 2.5 are considered novice. Since the survey is intended to discriminate between novice and expert, a wide range is attributed to “either” in the results. This produced 32 items indicating expert descriptors and 24 items indicating novice descriptors; the complete, ranked list of item is found in Appendix C.

Participants were coded for school status to distinguish high school students (1), college students (2), and high school faculty members (3). An ANOVA was conducted on the 100 variables (Table 2) revealing significant differences at the  $p < .01$  level among 9 variables and significant differences at the  $p < .05$  level among 11 additional items.

The mean responses of the high school students range from 1.44 to 4.37 (SD = 2.93) compared to that of high school teachers which range from 2.23 to 3.85 (SD = 1.62).

The 9 significant variables at the  $p < .01$  level are particularly telling. The first four items are descriptors that have negative connotations: low self-esteem, disorganized, gullible, and immature. High school students' means on these items were noticeably below 3 while the high school teachers were nearly 3 on these items. The greatest mean difference on the first two items (low self-esteem and disorganized) was greater than one and was approaching one on items three (.85) and four (.78).

Table 1 Sample of behaviors categorized as Expert, Either, and Novice

	Item	Mean
Expert	Easy to understand	3.658
	Tests appropriately	3.634
	Students excel	3.634
	Teaches various methods of success	3.609
	Takes discipline matters into his/her own hands	3.585
Either	Aims to please students	2.609
	Shows favoritism	2.560
	Easy grades	2.512
	Doesn't want to "rock the boat"	2.439
	Moves at a slow pace	2.439
Novice	Childish	1.804
	Maintains little control over the classroom	1.775
	Lacks knowledge	1.634
	Immature	1.609
	Beginner	1.536

On eight of the nine items in the  $p < .01$  range, the high school students rated the items as they had been predicted when the survey was created. In fact, the high school students only indicated two of the 20 statistically significant items as being "either a novice or an expert." Item 7, "doesn't compromise themselves," was expected to be rated

as an expert descriptor. This unpredicted rating is likely due to a misunderstanding in the meaning of the descriptor; some students had questions about the meaning but it was decided before the administration of the survey that assistance would not be provided in regard to the meaning of survey items. Items 1, 2, 3, 4, 6, and 9 (Appendix B) were expected to be rated as descriptors of novice teachers. In all but two cases, the high school teachers rated the survey items in the 3 range indicating that they believed that the items could be indicative of either novice or expert teachers. It may prove interesting to ask a teacher or an administrator if they would enjoy working with or hiring someone who was described as “(having) low self-esteem, disorganized, gullible, and immature.” What is the reason that the high school teachers refuse to give lower ratings to items that are clear descriptors of novice teachers? Even items that describe obvious deficiency with qualifiers such as item 9: “not strict enough,” do not rate more than a 2.62 by the high school teachers. Does this group believe that a teacher who is not strict *enough* could be either a novice or an expert? It may prove interesting to provide opportunities for responses regarding the philosophy of the respondents in future research.

At the  $p < .05$  level, there were 11 additional items showing significant differences among the three groups. Nine descriptors were expected to indicate experts, one descriptor was predicted to indicate a novice, and one descriptor was predicted to indicate either. In this range, all of the high school students' group responses fall into the predicted range, while only 3 of the high school teachers' group were in the predicted range. In the college students' group, only four of the responses fell into the predicted range.



Table 2 Analysis of variance

Sig	Item	Mean	Grp. 1	Grp. 2	Grp. 3	GMD	SD
0.000	Low self-esteem	2.06	1.59	2.40	2.83	1.24	.944
0.000	Disorganized	2.18	1.74	2.50	2.85	1.11	.896
0.001	Gullible	1.94	1.56	2.44	2.42	0.84	.810
0.002	Immature	1.72	1.44	1.60	2.38	0.78	.834
0.002	Tough	3.44	3.78	2.80	3.23	0.98	.837
0.004	Moves at a slow pace	2.52	2.22	3.00	2.77	0.78	.735
0.006	Doesn't compromise	3.04	2.63	3.33	3.69	1.06	1.04
0.008	Information memorized	3.82	4.11	3.90	3.15	0.96	.941
0.010	Not strict enough	2.16	1.85	2.40	2.62	0.77	.817
0.011	Hard on students	3.28	3.52	2.70	3.23	0.82	.757
0.016	Lacks knowledge	1.76	1.48	1.80	2.31	0.83	.870
0.020	Not reliant on textbook	4.04	4.37	3.90	3.42	0.95	.950
0.024	Students give extra effort	3.68	3.96	3.50	3.23	0.73	.844
0.025	Knows a subject thoroughly	3.92	4.15	4.10	3.31	0.84	.966
0.030	Well educated	3.34	3.52	3.30	3.00	0.52	.593
0.033	Students feel like they are learning	3.66	3.96	3.40	3.23	0.83	.917
0.034	Lots of experience in a field	4.18	4.37	4.30	3.69	0.68	.800
0.037	Demonstrates self-control	3.82	4.00	3.30	3.85	0.70	.748
0.045	Sturdy	3.48	3.74	3.20	3.15	0.59	.814
0.049	Participates in after-school	3.16	3.37	3.00	2.85	0.52	.681

Group 1 = High School students

Group 2 = College students

Group 3 = High School teachers and administrators

GMD=Greatest mean difference

The responses of the high school teachers suggest that we should continue to pursue these questions. Why are the high school teachers not differentiating between novice and expert behaviors? Of particular interest in this set of descriptors is: not reliant on textbook, students give extra effort, knows a subject thoroughly, well educated, and students feel like they are learning. The high school teacher group indicated all of these items as “either novice or expert.” If teachers and administrators were asked if they would prefer to work with teachers with these attributes, would they be as ambivalent or

would they have an opinion? It is worthwhile to explore further, the reason why high school teacher group members continue to respond in the middle of the range.

It appears that even on items that obviously describe a novice or expert teacher, students are more likely to rate that item in the 'possibly' or 'clearly' range than were the high school teachers. In Table 2, a column labeled "GMD" gives the greatest mean difference; that is the difference between the highest and lowest mean among the three groups. This number is almost always the difference between high school teachers and high school students. Also included in this table is the standard deviation for all subjects as a point of reference for these differences. Complete ANOVA results are found in Appendix D.

In discussion with some of the high school teachers, some had commented that any of these items could describe a novice or expert teacher; two adult participants entered '3' for every item and added a note on the survey conveying the fact that they read every item and honestly believed that the items could apply to either type of teacher. Overall, the high school teachers were more likely to choose 'either' than the college students or the high school students.

In the summer of 2007 I wrote a reflective narrative to examine the development of this study and its viability as a dissertation proposal. It was decided that in order to preserve the spirit of the original inquiry, the data collection method would be altered. The data from the initial study suggest that students are more likely to indicate that a particular behavior is either novice or expert behavior; adults who participated in the survey were more likely to indicate that either novice or expert teachers could demonstrate the presented behaviors. The following pages present these updates.

## CHAPTER 4

### METHODOLOGY

#### Introduction

This study consists of three components. The first component, Study One, is detailed in chapter three and culminated in the Student Perception Descriptor Survey which listed 100 behaviors gleaned from a student focus group and student interviews. Participants in this survey were asked to rank each behavior on a range from “Novice” to “Expert.” Results from the survey are presented in Chapter 3 and were used to develop the 75-item Teacher Behavior Checklist (Appendix E). The second component in this series is discussed later in this chapter and pertains to the reliability of the observer. Using the Teacher Behavior Checklist, a second rater and I performed observations of five teachers in order to establish baseline reliability for the instrument. During each simultaneous observation, the second observer and I followed the same protocols for observation as would be used in the major study.

#### Methodology for the Major Study

Using the instrument developed from Study One data of student-identified expert behaviors as well as supporting literature (Bullough, 1989; Buskist, Sikorski, Buckley, & Saville, 2002; Frymier & Thompson, 1996; Halonen, 2002; Kearney et al., 1991; Palmer et al., 2005; Shelton, Lane, & Waldhart, 1999; Shulman, 1986), teachers from two participating high schools were observed for data collection. Twenty-five teachers from two different high schools were observed as part of this study.

### *Participants*

A boarding school, a public charter school, a comprehensive public school, and a tuition religious school within the city limits of a large northeast city were targeted as observation sites. Each school was selected due to its school type and geographic location. Schools were contacted by telephone to describe the study and to establish the best means for future communication. A representative from the comprehensive public school had expressed interest in participation. Despite this expressed interest, further communication with the comprehensive public school became difficult to establish and this school was not included in this study. Similarly, a representative from the tuition religious school had expressed interest in supporting this study but was unable to provide a commitment for participation. The boarding school and public charter school accepted the invitation to participate and both schools indicated that email was the best form of communication.

Teachers at participating schools were selected randomly for inclusion in the study. All high school teachers in each school were assigned a number that was entered into a web-based randomizer utility. Upon creation of the randomized list, teachers were invited via email to participate in the study in the order determined by the randomizer. This process continued until twelve subjects from each school had consented to participation. In the interest of diversity among content areas and sexes of participants, additional teachers were asked to participate.

The random list of boarding school teachers produced five Social Sciences (SS) teachers, three Language Arts (LA) teachers, two Math (MA) teachers, and two Science (SC) teachers. Of these individuals, four SS teachers, three LA teachers, two MA

teachers, and two SC teachers expressed interest in participation in the study. The next teacher on the randomized list was a Math teacher who consented to participating in this research bringing the participant total to four SS, three LA, three MA, and two SC. I was interested in adding a Science teacher to create more equity among content areas but the remaining faculty in that content area did not consent to participation. Twelve participants from the boarding school consented to participation in this study achieving the participant goal for this site.

At the charter school, the random list of teachers produced three SS teachers, four LA teachers, three MA teachers, and three SC teachers. Nine of the teachers had consented to participation before the scheduled observations began. Once the classroom observations had started, two additional teachers had responded with consent and one teacher in the science department declined. The next teacher on the randomized list was a science teacher who was invited to participate and consented. One additional teacher from the science department expressed an interest in participating and was added to the study. This addition brought the total number of study participants to twenty-five.

Each participant was observed in a regular educational setting for one regularly planned period of instruction lasting from 42 to 60 minutes. Teachers conducted the class using their typical routine and normal educational practices. During this period, the participants were observed using an observation technique as described by Zepeda (2007) with a predetermined checklist of behaviors. The data collection utilized an instrument developed for this study. A checklist of 75 teacher behaviors similar to that of Sullivan and Glanz (2000) was completed for each observation. In a pre-observation conference,

each teacher was asked to complete the attached teacher form (Appendix D), which is a questionnaire including demographic information.

### *Measures*

Data were collected using the means described in the coming pages.

#### *Teacher Behavior Checklist*

Data were gathered using the attached 75-item behavior checklist developed from Study One discussions with high school students (Appendix E). A tick was entered each time a listed behavior was demonstrated by the teacher during the class period. A maximum of five instances of a single behavior was recorded. Multiple instances of a behavior were only ticked when the behavior qualified as a separate event. Separate events are at least one minute apart, separated by another behavioral event, and are not explicit repetitions of the prior event (such as a student asking for instructions to be repeated). It was not necessary for the separating behavioral event to be one that is listed on the checklist. A stopwatch on the researcher's clipboard was used to maintain accurate timing between behavioral events. Subjects were not deceived in any way; however, the term "expert" was not used in the pre-conference discussion with the teacher aside from its use on the consent form.

The indicators of the expert and novice teacher behaviors as well as their operationalized indices were developed from the core information found in the focus group and student interviews as well as examples from the literature. A sample of commonly occurring behavioral items and their operationalization is found in Table 3.

Table 3 Examples of operationalized behaviors

---

Connects with students	smiles, laughs with students, relates stories, and knows students' names (Buskist et al., 2002; Halonen, 2002)
Controls the class through teaching	displays the content, the lessons, and the plan for the period to control behavior instead of threats and detentions (Buskist et al., 2002)
Controls the pace of learning	uses an agenda or pre-organizer to keep class paced and on topic; often times a teacher refers to an agenda to maintain order and does not run out of time; has a method to store and answer off-topic or advanced questions (Haloren, 2002; Kearney et al., 1991)
Explains subject clearly and effectively	demonstrates material using logical progressions to define and implement material whether new or old (Shelton, Lane, & Waldhart, 1999)
Helpful	provides assistance to work during class or assigned as homework (Shelton, Lane, & Waldhart, 1999)
Knows a subject thoroughly	not taken 'off guard' with questions; moves seamlessly between prior material and current material using a broad range of content knowledge to improve understanding (Buskist et al., 2002; Frymier & Thompson; Shelton, Lane, & Waldhart, 1999; Shulman, 1986)
Motivates students	enthusiastic, provides encouragement, and empowers the students through confidence in the students' ability (Bullough, 1989; Buskist et al., 2002; Frymier & Thompson, 1992; Haloren, 2002; Kearney et al., 1991)
Uses examples	provides suitable parallels between known and unknown or unclear information in order to facilitate improved understanding (Shulman, 1986)
Wants to fit in with students	jokes with students as a peer and draws parallels to their lives and experiences; gets esteem from being accepted by the students (Chen, 2000; Frymier & Thompson, 1992).

---

### *Existing Means*

Existing means for the determination of teacher expertise are discussed at length by Palmer, Stough, Burdenski, and Gonzales (2005). Criteria for these determinations were included in two questionnaires and distributed to participating teachers and their supervisors. In the case of this current study, the divisional principals of each school completed these forms.

### *Teacher Questionnaire*

Pre-observation conferences with participants took place before or after the school day, or during other available times selected by the participants. Participants were not offered any compensation or inducements.

Each participant completed a Teacher Questionnaire (Appendix F). Items on the teacher questionnaire coincide with criterion based measures of expertise discussed in Palmer, Stough, Burdenski, and Gonzales (2005). Items on the questionnaire included demographic information as well as seven yes and no questions regarding education history, certification, professional affiliations, and training, each scored as two and one respectively. Additional questions solicited numeric data regarding lengths and amounts of service in various capacities each scored as such.

### *Principal Questionnaire*

Principals of participating teachers completed the Principal Questionnaire (Appendix F). This questionnaire is demographic in nature and requests that the principal rank order the teachers according to their level of Expertise and indicate with a yes or no as to whether they consider the teacher an Expert. Responses of yes were scored as two and responses of no were scored as one.



### *Procedure*

Each participating teacher received an envelope containing two copies of the consent form and one copy of the Teacher Questionnaire. Before each observation, teachers were given 5-15 minutes to complete the questionnaire and read and sign the consent form. They then placed one copy of the signed consent form along with the completed questionnaire in the envelope and sealed it. Participants retained a copy of the consent form for their records. The envelope remained sealed until all observations were completed. On all forms, teachers were identified by first name and room number; where any specific references were necessary in the current manuscript, pseudonyms are being used. Before the meeting, observations were scheduled via electronic mail at times agreed upon by the teacher and the researcher; contact information was provided to the teacher in case an absence or scheduling conflict arose so that an observation could be rescheduled as soon as possible. There were no conflicts throughout the observation schedule. The scheduling goal was to complete observations within one week per school and this goal was met. In some cases, due to the time restrictions of the participating teachers, questionnaires could not be completed before the observation. In those cases, the consent form was signed and the questionnaire was picked up at a later time.

Once the participating teachers were identified, principals were asked to complete the Principal questionnaire (Appendix F) containing basic demographic information and were also asked to rank order the participating teachers from most (1) to least (12) expert and to indicate their classification of Expert by indicating “Yes” or “No.” The principals were asked to identify the teachers by their first name and room number only. No criteria were provided by the researcher for this designation; however, the principal was free to

use any resources available. One principal asked if criteria were being provided for this designation or if there was a specific theorist whose criterion was being utilized. The principal was told that there were no guidelines being provided. The attached principal form was placed in a sealed envelope and was not revealed to the researcher until after the observations were complete. Principals were asked to complete these forms within two days and return the sealed envelope to me in person. In one case, the form was returned electronically and the file was not opened until after the observations were complete.

#### *Observation and Reaction to Disruption*

In the interest of discretion, I sat in the rear of the classroom and did not communicate with the observed teachers or students once the class started. In a few cases, the teacher chose to recognize me as a visitor; I introduced myself and indicated that I would be observing the class. Throughout the class period, using the Teacher Behavior Checklist, I made a tick each time an observed teacher demonstrated a behavior on the list. Using a digital stopwatch attached to my clipboard, I made note of the time between repeated behaviors as multiple iterations of behaviors were not recorded if they occurred within one minute without being separated by another behavior.

Students did not engage me during class. My planned response in case I was engaged by a student was to direct the student to the class work with a gesture. If the student continued to establish a conversation and it was necessary, I would quietly remind the student that I was an observer in the classroom and would not engage in a discussion. In the event of a fire drill or any other major classroom disruption, I planned to continue that observation and schedule a fresh observation as soon as possible. During

one period in the charter school, the teacher and I were informed of a planned shelter-in-place drill that, when enacted, caused no class disruption. During this drill, class activity continued without any noticeable pauses or effect on what appeared to be regular classroom activity. During another observation in the charter school, noted in the data as CHA6, the teacher made a departure from the planned classroom activity. The observation was continued and the teacher confirmed that this type of flexibility in planning is common, thus the data was retained.

### *Reliability*

In my current role as an educator, I have the opportunity to observe teaching on a regular basis using various formats, both alone and with others. By agreeing on the types of observation activities beforehand, a second observer and I were able to have rich discussion afterwards. Common techniques include wide-angle and narrow angle data collection such as class traffic, selective-verbatim, and anecdotal notes as described by Zepeda (2007). Checklist formats as well as interval-timed movement mapping and behavioral response recording have also been used. Anecdotal information suggests that there is, more often than not, agreement among other observers' accounts of classroom practice and my account.

On a regular basis, as part of my current professional duties, I observe members of my department. As a follow-up to these observations, I meet with divisional supervisors or other department members who have observed these teachers to discuss their observations of the same teacher so that I can assist in addressing any issues that may have been observed by the supervisor or colleague. There have been opportunities to perform simultaneous observations with supervisors or colleagues after which we were

able to discuss the class. Due to union constraints, these observational materials cannot be shared between me (a teacher) and some other observers (administrators) to obtain measurable results. However, these discussions have suggested that the second observer and I agree on both positive classroom performances as well as concerns in the classroom. In situations in which we have disagreed on a particular area, we have also come to an understanding and agreement on individual perspectives and preferences. To strengthen these anecdotal data, further procedures were implemented.

In order to establish reliability as an observer using this instrument, a testing phase was executed with the Teacher Behavior Checklist as the second component of this study before the formal research observations began. Along with another Masters-level teacher from one of the hosting schools, I observed five teachers from separate divisions of one of the hosting schools for one full period each. These teachers consented to observation in the same manner as described in the methodology but did not complete questionnaires. Moreover, the collected checklist data are not included in the formal study analysis, although the reliability coefficients were calculated and included.

Before the observations, I met with the other observer to discuss the planned procedures for observation and notation with the Teacher Behavior Checklist. In this meeting, the other observer requested that the checklist be reprinted with the items in alphabetical order. A new version of the checklist was created with the items in alphabetical order and the observer requested two days to become familiar with the items and the layout of the pages. We met again two days later to discuss the checklist and procedures. Intra class coefficients were calculated after the 3<sup>rd</sup> and 5<sup>th</sup> observations and talk-aloud discussions were held after the 1<sup>st</sup> and 4<sup>th</sup> observations. Talk aloud discussions

occurred immediately after the observations in a nearby, private, room without outside disturbance.

Interrater reliability during this preliminary phase of the Teacher Behavior Checklist observations was measured using intraclass correlation (ICC) and were calculated on each set of observation data after the third observation was completed. Because the same two raters observed each teacher and were the only raters, the data were analyzed in the third case for consistency (3,1) as described by Huck (2004).

There was an increase from .595 to .702 in ICC (Table 4) from the first observation to the second and a slight decrease from .702 to .692 between the second and the third observation. This increase from the first pair of observations to the third set of observations may be attributed to the talk-aloud discussion conducted after the first observation as well as familiarity with the process and the instrument. The coefficient of the first observation fell within the ‘moderate’ range (ICC 0.4 - 0.6) and the coefficients of the second and third observations both fell within the ‘good’ (ICC 0.6 – 0.8) range.

After the fifth observation, the ICC (3,1) was again calculated (Table 4). The fourth observation revealed a slight decrease from .692 to .642 (good). The trend of ‘good’ range ICC coefficients continued until the final observation which decreased from .642 to .341 (poor, ICC 0.0 – 0.4). This may be a random fluctuation or due to a level of fatigue on the part of the observers due to the scheduling constraints of willing participants.

Table 4 Intraclass correlations after five observations

	Observ 1	Observ 2	Observ 3	Observ 4	Observ 5
ICC coefficients	.595	.702	.692	.642	.341

In the talk-aloud follow-up discussions held after the first and fourth observations, insights and questions arose that helped in refining the interpretation of the instrument. In order to maximize retrospective recall of the observed class period, we met in the same private room we used for all of our discussions of the instrument and protocols and made use of the Teacher Behavior Checklist to assist in the reporting of specific examples (Ericsson & Simon, 1993). Each meeting was immediately following the observation during which we compared items noting any obvious differences in scoring providing examples of the behaviors observed. Some obvious items that were dichotomous such as “Mature” and “Young” raised questions regarding their scoring. My second observer asked whether the items should have been scored one time since they are dichotomous or if they should have been scored at the maximum level because they are chronic states. We decided to score them with one tick. We also discussed examples of observed behaviors that we ticked and some behaviors that we did not observe. In each instance, even though there were some differences in how we scored, we came to an understanding in regard to the approach we took to scoring. At one point, the second observer offered to change his scoring on two items after gaining additional insight into the operationalization of the items. I did not allow the change as it was most important to measure the reliability.

This study utilized a blend of measures from existing literature as well as a new behavior checklist instrument constructed by the researcher. One of the aims of this study was to determine the level of agreement among these different measures. The ability of these measures to discriminate expert from non-expert teachers with and without the new instrument may produce interesting results.

The purpose of this study is to quantify the number and variety of student-designated expert and non-expert behaviors that are demonstrated by teachers in a typical instructional period using the Teacher Behavior Checklist. Once these data were gathered, a comparison was made among groups of teachers who are designated as experts by established means in the literature (Palmer et al., 2005) versus those who are determined to be experts by demonstration of the student-designated behaviors during the observed class period.

#### *Research Questions*

1. What type and frequency of behaviors (expert and novice) from the Teacher Behavior Checklist are demonstrated in a high school classroom?
2. What is the relationship among teachers indicated as experts according to existing means, nominated as experts by their supervisors, and those indicated as experts according to behaviors observed in class using the Student Descriptor tool?

## CHAPTER 5

### RESULTS

The results of this study are presented in this chapter in three different sections. The first section provides an overview of the demographic data. The second and third sections address the research questions.

#### Participant Demographics

All participants (Table 5) in this study were from high school divisions from two different high schools in a large northeast city. The schools represent two types of non-traditional schools in that one is a city charter school and one is a boarding school. These teachers represented four core academic areas. The ages of the participating teachers ( $n = 25$ ) ranged from 23-57 with a mean age of 34 with one teacher not reporting. Teachers in the charter school had a mean age of 37.33 with a standard deviation of 11.23 and the teachers in the boarding school had a mean age of 30.42 with a standard deviation of 6.17. The mean years of service for the group are 9.4 years with a standard deviation of 8.0. Within each school there existed differences in the terms of service. The charter school teachers had a mean total years in education of 6.2 years with a standard deviation of 3.4 years while the boarding school teachers had a mean total years in education of 12.8 years with a standard deviation of 10.2 years.

Eighty-four percent of the participants identified themselves as Caucasian, eight percent identified themselves as African-American, four percent identified as Asian, and four percent identified as Mixed Race. Four academic areas were represented with 28% coming from Language Arts, 28% from Social Sciences, 24% from Mathematics, and 20% from Science. In this study, forty percent of the teachers were male and sixty



percent were female (see Table 5). Demographics for the total faculty populations of each school were not available for comparison.

Table 5 Demographics

	Frequency	%	Mean (SD)
<b>Gender</b>			
Male	10	40	--
Female	15	60	--
<b>Ethnicity</b>			
African American	2	8	--
Asian	1	4	--
Caucasian	21	84	--
Mixed ethnicity	1	4	--
<b>Age</b>			
	--	--	33.9 (9.5)
Charter school	--	--	30.4 (6.2)
Boarding school	--	--	37.3 (11.2)
<b>Total years of service</b>			
	--	--	9.4 (8.0)
Charter school	--	--	6.2 (3.4)
Boarding school	--	--	12.8 (10.2)

Overall, the demographics of the participants are similar to the national averages for all schools (National Center for Education Statistics, 2003). Of note are the differences in percentage of male and female teachers in this study compared to the national average. In this study, 40% of the teachers are male compared to a national average of 25%. National data for boarding schools are not available from NCES at this time; the national average for charter schools is 27% male and 73% female. National averages for the age of teachers is 37.9 years old overall and 43 years old for cities. The mean age of teachers in this study is 10 years younger than the national average for city teachers. One likely explanation for this case may be the schools' proximity to a number of colleges with well known teacher preparation programs.

### Research Question 1

What type and frequency of behaviors (expert and novice) from the Teacher Behavior Checklist are demonstrated in a high school classroom?

#### *Observed behaviors*

The number of observed behaviors from the checklist was calculated among all 25 observations. The ten most commonly occurring behaviors (Table 6) were Connects with students (111), Uses examples (92), Controls class through teaching (86), Motivates students (82), Controls the pace of learning (79), Explains subject clearly and effectively (79), Helpful, (77), Easy to understand (76), Wants to fit in with students (75), and Knows subject thoroughly (69). Of these ten items, four also had statistically significant ( $p < .01$ ) correlations with other items on the checklist. Three items on the Teacher Behavior Checklist were not observed. These items were Easy grades, Gullible, and Shy. Of the seventy-five possible behaviors from the checklist, seventy-two of them were observed during the current research study.

Table 6 Ten most commonly observed behaviors

Item	Total
Connects with students	111
Uses examples	92
Controls class through teaching	86
Motivates students	82
Controls the pace of learning	79
Explains subject clearly and effectively	79
Helpful	77
Easy to understand	76
Wants to fit in with students	75
Knows a subject thoroughly	69

### *Frequency and Variety*

The mean number of unique behaviors observed was 45 with a standard deviation of 4.13. The mean number of total behaviors observed was 103 with a standard deviation of 16.24. The mean number of unique expert behaviors observed was 34 with a standard deviation of 2.85. The total number of expert behaviors observed was 81 with a standard deviation of 21.23.

### *Scoring*

A score for observed expertise was calculated using the quantitative data from the Teacher Behavior Checklist. The Expert score is the total expert behaviors observed out of the total possible expert behaviors that were available for observation (43 behaviors x 5 possible iterations = 215). Similarly, the Novice score is the total novice behaviors observed out of the total possible expert behaviors that were available for observations (32 behaviors x 5 possible iterations = 160). The Expertise rating ( $E^x$ ) is calculated by dividing the Expert score by the Novice score. This composite is intended to act as an attribute of the observational data and not a rating of the teacher as these observations are quantifications of behavior and not evaluative in nature. Higher positive numbers indicate a greater number of expert behaviors than novice behaviors, while lower negative numbers indicate a greater number of novice behaviors than expert behaviors.

A frequency distribution of these scores was calculated for all of the participants of this study. The  $E^x$  rating for the participants ranged from .44 to 1.21 with a mean of .99 and standard deviation of .11.

## Research Question 2

What is the relationship among teachers indicated as experts according to existing means, nominated as experts by their supervisors, and those indicated as experts according to behaviors observed in class using the Teacher Behavior Checklist?

In order to answer research question 2, three pairs of correlation coefficients were calculated. The first analysis sought intercorrelations among the 75 Teacher Behavior Checklist items. The second correlational analysis explored the relationship among the checklist items and the frequency and variety of observed behaviors. The final correlation compared the checklist items to existing means in the literature as described by Palmer, Stough, Burdenski, and Gonzales (2005). Finally, using four existing means of expertise indication, profiles were explored through a focused look at the correlational data.

### *Intercorrelations*

A two-tailed Pearson correlation was calculated on all of the variables in order to identify relationships among the variables. Due to the sample size and in the interest of investigating a smaller set of variables within the Teacher Behavior Checklist, this section will discuss checklist items with correlation coefficients of .750 or higher. Several statistically significant correlations revealed at the  $p < .01$  level with correlation coefficients of .750 or greater (see Table 7). The item Total expert behaviors observed (TEB) correlated with Connects with students (CWS), Controls the class through teaching (CCTT), Controls the pace of learning (CPL), and Explains the subject clearly and effectively (ESCE). The item Connects with students correlated with Total behaviors observed (TBO) and Variety of expert behaviors (VEB). Controls the class through teaching correlated with Controls the pace of learning (.811), Explains the subject clearly

and effectively correlated with Uses examples (UE), and Immature (IM) correlated with Inconsistent with expectations (IWE). The item Pushes students to excel (PSTE) correlated with Students excel (SE), Students excel correlated with Students give extra effort (SGEE), and Maintains little control over the classroom (MLC) correlated with Can be taken advantage of (CBTA). Statistically significant negative correlations were revealed between Maintains little control over the classroom and Controls the pace of learning and between Mature (MA) and Young. At this level of discrimination, a statistically significant positive correlation was revealed between Speaks with an obvious accent (SWOA) and Teaches over students' ability (TOSA). This correlation is not a meaningful one as there was only one teacher who demonstrated an obvious regional accent of the city in which this study was performed.

#### *Frequency and Variety*

An early hypothesis that I was considering is that teachers who demonstrate a greater degree of expertise exhibit a more narrow range of behaviors in the classroom. This hypothesis was embedded within the second research question. In an effort to explore this relationship, totals were calculated for unique behaviors observed (UBO), total behaviors observed (TBO), unique expert behaviors observed (UEBO), and total expert behaviors observed (TEBO).

A two-tailed Pearson correlation (Table 8) was calculated between these totals and the items on the Teacher Behavior Checklist. Of particular interest are those items with statistically significant positive correlations ( $p < .01$ ) with Total expert behaviors observed: Controls class through teaching (.855), Controls the pace of learning (.816), Connects with students (.808), Explains subject clearly and effectively (.777), Knows a

subject thoroughly (.735), Easy to understand (.689), Impresses students with knowledge (.675), Uses examples (.673), Brings authority to the workplace (.662), Knows range of students' ability (.648). These items are all items that were indicated by high school students as expert behaviors in study one.

Items with statistically significant positive correlations ( $p < .01$ ) to Total unique behaviors observed are Caters to "bad students" (.620), Inconsistent with expectations (.564), Immature (.555), Childish (.549), Students get away with careless work (.541), Not strict enough (.541), Wants to be friends with students (.539), and Maintains little control over the classroom (.516). At the  $p < .05$  level, additional correlations include Disorganized (.492), and Arrogant (.486). In study one, these items were indicated as novice/non-expert behaviors.

#### *Existing Means*

Using information provided by Palmer, Stough, Burdenski, and Gonzales (2005) various methods of determining expertise were compared to the items in the Teacher Behavior Checklist. Some of these indices were included as items found in the teacher questionnaire, principal indication of expertise, and principal ranking (Appendix F). Literature that utilized similar means of assessment, thus included for comparison in this study, were indicated in the data by the primary investigator's name. Principals of the participating teachers rank ordered the teachers by level of expertise.

A Pearson correlation was utilized to investigate possible relationships between the expertise determinations according to the existing means in Palmer, Stough, Burdenski, and Gonzales (2005) and the items found in the Teacher Behavior Checklist. A one-tailed correlation was used due to the small sample size.

Table 7 Pearson correlation of checklist items above .750

	SWOA	SE	PSTE	MA	IM	ESCE	CTPL	CCTT	CWS	CBTA	MLC	TBO	VEB	TEBO	UE	IWE	YO	SGEE	TOSA
SWOA	1.00																		
SE	-0.23	1.00																	
PSTE	-0.35	0.75**	1.00																
MA	-0.17	-0.05	0.02	1.00															
IM	-0.14	-0.20	-0.24	-0.08	1.00														
ESCE	-0.15	0.34	0.55**	0.29	-0.53**	1.00													
CTPL	-0.04	0.40*	0.45*	0.30	-0.56**	0.71**	1.00												
CCTT	-0.10	0.62**	0.63**	0.17	-0.53**	0.70**	0.81**	1.00											
CWS	-0.45*	0.55**	0.68**	0.23	-0.30	0.59**	0.48*	0.68**	1.00										
CBTA	0.27	-0.34	-0.34	-0.25	0.22	-0.47*	-0.49*	-0.50*	-0.55**	1.00									
MLC	0.03	-0.40*	-0.39	-0.15	0.43*	-0.65**	-0.77**	-0.60**	-0.43*	0.76**	1.00								
TBO	-0.32	0.41*	0.53**	0.16	-0.19	0.54**	0.64**	0.68**	0.75**	-0.37	-0.43*	1.00							
VEB	-0.30	0.27	0.46*	0.03	-0.36	0.42*	0.38	0.55**	0.82**	-0.48*	-0.33	0.69**	1.00						
TEB	-0.25	0.52**	0.65**	0.27	-0.51**	0.78**	0.82**	0.86**	0.81**	-0.54**	-0.66**	0.87**	0.69**	1.00					
UE	-0.15	0.20	0.33	0.27	-0.51*	0.82**	0.59**	0.47*	0.57**	-0.45*	-0.60**	0.52**	0.43*	0.67**	1.00				
IWE	-0.12	-0.15	-0.21	-0.28	0.75**	-0.55**	-0.49*	-0.50*	-0.49*	0.52**	0.50*	-0.23	-0.47*	-0.52**	-0.59**	1.00			
YO	0.20	-0.17	-0.23	-0.82**	0.15	-0.37	-0.32	-0.24	-0.32	0.30	0.26	-0.31	-0.16	-0.43*	-0.41*	0.21	1.00		
SGEE	-0.25	0.80**	0.58**	0.16	-0.04	0.41*	0.35	0.43*	0.48*	-0.37	-0.49*	0.45*	0.25	0.50*	0.42*	-0.12	-0.46*	1.00	
TOSA	0.78**	-0.35	-0.39	-0.04	-0.03	-0.11	0.08	-0.01	-0.36	0.27	0.06	-0.05	-0.21	-0.12	-0.02	0.02	0.11	-0.29	1.00

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

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

Table 8 Pearson correlations for checklist items with variety and frequency

	UBO	TBO	UEBO	TEBO
Argues with students	.204	-.310	-.563**	-.449*
Arrogant	.486 *	.162	.099	-.215
Boring	.215	-.575**	-.344	-.630**
Brings authority to the workplace	-.295	.605 **	.406	.673 **
Can be taken advantage of	.410 *	-.370	-.482*	-.544**
Caters to "bad students"	.620 **	-.145	-.067	-.367
Childish	.549 **	.066	-.013	-.226
Confident	-.004	.684 **	.582 **	.635 **
Connects with students	-.180	.751 **	.817 **	.808 **
Controls class through teaching	-.383	.675 **	.550 **	.855 **
Controls the pace of learning	-.534**	.639 **	.384	.816 **
Disorganized	.492 *	-.404*	-.159	-.584**
Easily taken off-subject	.427 *	.331	.215	.045
Easy to understand	-.378	.565 **	.395	.689 **
Explains subject clearly and effectively	-.554**	.542 **	.420 *	.777 **
Friendly	-.316	.486 *	.387	.602 **
Gives appropriate work	-.477*	.332	.443 *	.583 **
Gives students proper respect	-.140	.506 **	.233	.557 **
Has all information memorized	-.270	.515 **	.510 **	.548 **
Immature	.555 **	-.194	-.364	-.511**
Impresses students with knowledge	-.466*	.572 **	.468 *	.686 **
Inconsistent with expectations	.564 **	-.233	-.466*	-.525**
Incorporates new concepts well	-.242	.554 **	.508 **	.637 **
Knows a subject thoroughly	-.270	.682 **	.416 *	.735 **
Knows range of students' ability	-.510**	.481 *	.389	.662 **
Maintains little control over the classroom	.516 **	-.428*	-.327	-.664**
Mature	-.467*	.162	.032	.265
Motivates students	-.099	.536 **	.495 *	.612 **
Moves at a challenging pace	-.123	.696 **	.490 *	.644 **
Moves at a slow pace	.296	-.528**	-.410*	-.653**
Not quick to send students to the office	.340	-.393	-.477*	-.522**
Not strict enough	.541 **	-.395	-.425*	-.699**
Professional towards all students	-.455*	.305	.443 *	.555 **
Pushes students to excel	-.210	.532 **	.457 *	.648 **
Reasonable	-.260	.372	.132	.461 *
Sees things from the students' point of view	-.241	.563**	.191	.544 **
Students excel	-.230	.414 *	.269	.521 **
Students get away with careless work	.541 **	-.482*	-.617**	-.669**
Students give extra effort	-.269	.451 *	.246	.504 *
Too strict	.091	-.452*	-.426*	-.419*
Tough	.349	.377	.415*	.261
Uses examples	-.512**	.518 **	.433 *	.675 **
Varies teaching methods	-.057	.400 *	.337	.456 *
Wants to be friends with students	.539 **	.052	-.141	-.341
Wants to fit in with students	.399 *	.336	.031	.015
Young	.479 *	-.313	-.162	-.431*

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

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



A one-tailed Pearson correlation was conducted between the indication of expertise according to the various literature criteria and the Variety of expert behaviors observed and the Total expert behaviors observed. Statistically significant positive correlations were reported between Total expert behaviors observed and all measures except Strahan. At the  $p < .05$  level, Allen and Casbergue (1997), Cleary and Groer (1994), and Tochon and Munby (1993) each produced a statistically significant positive correlation to Total expert behaviors observed while at the  $p < .01$  level, both Moallem (1998) and Swanson, O'Connor, and Cooney (1990) produced a statistically significant positive correlation to Total expert behaviors observed.

A one-tailed Pearson correlation was performed between the seventy-five behavioral checklist item and the expert teacher indices including the six literature criteria sets, Experience measures (three items), Cooperating measures (two items), and Mentoring measures (two items). A one-tailed Spearman rank correlation was performed on the Principal ranking (one item). This correlation matrix revealed a pattern of behavioral profiles that coincided with the various criterion based data found in the literature. The descriptions that emerged are detailed in Table 9 by Principal rank, Experience, Cooperating, and Mentoring.

#### *Teacher Behavior Checklist*

Twenty-eight of the possible forty-one expert behaviors (68%) included in the seventy-five item Teacher Behavior Checklist produced statistically significant positive correlations with the appropriate expertise indices found in Palmer, Stough, Burdenski, and Gonzales (2005). Thirteen of the expert behaviors (32%) provided no significant correlations. Twenty-five out of the thirty-four non-expert/novice type behaviors (74%)

also produced statistically significant negative correlations with the expert determinations in the listed literature. Nine of the non-expert/novice behaviors (26%) produced no statistically significant correlations.

Statistically significant positive correlations suggest that, at the  $p < .05$  level, teachers who are likely to Assign lots of reading, Bring authority to the workplace, Control the pace of learning, Give students proper respect, be Helpful, Incorporate new concepts well, be Mature, be Professional towards all students, and be Reasonable also receive an indication of expertise according to Allen and Casbergue (1997). At the  $p < .01$  level, teachers would Know the range of students' ability, Teach various methods of success, Treat all students the same would indicate as experts as well. At the  $p < .05$  level, there is a statistically significant negative correlation that suggests that teachers who are indicated as experts by Allen and Casbergue (1997) would not be Appropriately strict.

At the  $p < .05$  level, statistically significant positive correlations suggest that these teachers who Control the class through teaching, are Easy to understand, Impress students with knowledge, Incorporate new concepts well, Know the range of students ability, are Mature, are Professional towards all students, are Reasonable, Treat all students that same are also experts according to Cleary and Groer (1994). At the  $p < .01$  level, additional statistically significant positive correlations include Confident, Controls the pace of learning, Explain the subject clearly and effectively, Gives students proper respect, Teaches various methods of success, and Uses examples. Statistically significant negative correlations exist ( $p < .05$ ) that suggest that these experts are Disorganized, Maintain little control over the classroom, and are quick to send students to the office.

Statistically significant positive correlations were found at the  $p < .05$  level suggesting that teachers indicated as experts by Maollem (1998) are also likely to Bring authority to the workplace, Give students proper respect, be Helpful, and be Reasonable.

At the  $p < .01$  level, statistically significant positive correlations further suggest that these experts also Explain the subject clearly and effectively, Incorporate new concepts well, Know the range of students' abilities, are Professional towards all students, Teach various methods of success, and Use examples. Statistically significant negative correlations ( $p < .05$ ) suggest that Moallem's (1998) experts are not Disorganized, do not Lack knowledge, are not Not strict enough, and do not Want to fit in with students. Statistically significant negative correlations at the  $p < .01$  level suggest that these teachers do not Maintain little control over the classroom and do not Want to be friends with the students. In this study, the inter-collegial reputation item was not measured, nor was any inquiry made to the principals regarding management problems or discipline issues in the classroom.

Experts, according to Strahan's (1989) criteria, due to the statistically significant positive correlation ( $p < .05$ ) are likely to Give lots of detentions and have Low self-esteem. Results using Strahan's (1989) criteria for expertise are not consistent with results using any of the other expertise indices.

Statistically significant positive correlations were found at the  $p < .05$  level suggesting that teachers who Control the class through teaching, Control the pace of learning, Explain the subject clearly and effectively, Know a subject thoroughly, Motivate students, and Use examples also receive an indication of expert according to the criteria of Swanson, O'Connor, and Cooney (1990). At the  $p < .01$  level, the data also

suggest that these teachers are also likely to Bring authority to the workplace, be Confident, be Easy to understand, Give proper respect to the students, Incorporate new concepts well, Know range of students' ability, be Mature, Move at a challenging pace, and See things from the students point of view. A number of statistically significant negative correlations ( $p < .05$ ) suggest that teachers indicated as experts by Swanson, O'Connor, and Cooney (1990) are not likely to be Disorganized, to be Not strict enough, to have Students get away with careless work, Willing to help, or Young ( $p < .01$ ).

Teachers who Control the class through teaching, Control the pace of learning, Demonstrate self control, Explain the subject clearly and effectively, and Use examples have revealed statistically significant positive correlations ( $p < .05$ ) with the criteria of Tochon and Mundby (1993). At the  $p < .01$  level, these teachers also Bring authority to the workplace, are Confident, are Easy to understand, Impress the students with knowledge, Incorporate new knowledge well, Know the subject thoroughly, are Mature, Move at a challenging pace, See things from the students' point of view. Statistically significant negative correlations suggest that these teachers are not Helpful ( $p < .05$ ) or are Young ( $p < .01$ ). For the purpose of the inclusion in this study, the master's degree criteria were altered to allow for a master's degree in the teacher's content area because the study's other criteria were similarly restrictive.

#### *Principal Expert Designation*

Principals of the observed teachers were asked to indicate whether or not they would like to nominate any of the teachers as an expert. No guidelines were provided to the principals for this designation. These nominations provided statistically significant positive correlations ( $p < .05$ ) that suggest that nominated teachers Bring authority to the

workplace, Impress students with knowledge, Know a subject thoroughly, and are Mature. Statistically significant positive correlations at the  $p < .01$  level indicate that these experts also Incorporate new concepts well, Treat all students the same, Use various assessment techniques, and Vary teaching methods.

#### *Principal Rank Order*

In order to supplement the yes-or-no expertise designation provided by the principals, the principals were asked to rank order the observed teachers by level of expertise. These rankings were analyzed using a Spearman rank correlation with all of the behavioral items and produced statistically significant results at the  $p < .05$  level suggesting that teachers who are indicated as expert by the principals Know the range of students' ability, Treat all students the same, Use examples, and are Willing to help. At the  $p < .01$  level, these teachers are also likely to be Helpful are Professional towards all students. A greater number of statistically significant negative correlations were found ( $p < .05$ ) suggesting that teachers with a greater level of expertise according to the principals are not likely to be Easily taken off subject, are not Immature, do not Lack humility, are not Mean, and do not Want to be friends with students. Significance at  $p < .01$  suggests that these teachers do not Want to fit in with students.

#### Suggested Teacher Profiles Based on Accepted Expert Indices

Teacher profiles emerged based on correlational data between items found on the Teacher Behavior Checklist and other accepted indices of teacher expertise. These four profiles are outlined below. At the close of this section, correlation coefficients are listed (Table 8) for comparison. Common and unique behaviors among profiles are detailed in Table 9.

### *Principal Ranking*

Social nomination or other public recognition is an accepted indicator of expertise (Palmer et al., 2005). Principals from each school ranked the participating teachers from most (1) to least (12) expert. A one-tailed Spearman rank correlation matrix was calculated between the seventy-five behavioral items and the principal rankings. Teachers ranked as more expert ( $p < .05$ ) are not Easily taken off subject, Impress students with knowledge, Know the range of student abilities, do not Lack humility, Maintain control over the classroom, are not Mean, Use examples, do not Want to be friends with students, and are Willing to help. Correlating at the  $p < .01$  level are traits such as Helpful, not Immature, Professional towards all students, and does not Want to fit in with students.

### *Experience*

Three items on the teacher questionnaires referred to the experience of the educators in varied contexts. Statistically significant correlations were found between the level of teacher experience and items from the Teacher Behavior Checklist. Experience in this study was measured in three categories: Years in current position, Years in current school, and Years in education. The Experienced teacher ( $p < .05$ ) is not Boring, Controls the class through teaching, is not Disorganized, Gives students proper respect, Knows the range of the students' abilities, Maintains control over the classroom, is Not quick to send students to the office, is Strict enough, does not let Students get away with careless work, has Student give extra effort, is Willing to help, and is not Young. This type of teacher also ( $p < .01$ ) Brings authority to the workplace, is Confident, Controls the pace of learning, is Easy to understand, Explains the subject clearly and effectively,

Impresses students with knowledge, Incorporates new concepts well, Knows a subject thoroughly, is Mature, Moves at a challenging pace, Sees things from the students' points of view, and Uses examples.

### *Cooperating*

Educators who are invited to work as cooperating teachers satisfy one of the expertise criteria in nearly 20% of the teacher expertise literature reviewed by Palmer, Stough, Burdenski, and Gonzales (2005). Cooperating teachers are those who have indicated that they have worked with local universities hosting student teachers in their field experience. Statistically significant positive correlations ( $p < .05$ ) between the Cooperating teacher variables and all of the Teacher Behavior Checklist variables suggest that these teachers Control the class through teaching, are not Disorganized, Impress students with knowledge, Incorporate new concepts well, Knows a subject thoroughly, are not Lenient, are Not quick to send students to the office, are not Not strict enough, are Professional towards all students, are Reasonable, Teaches various methods of success, Treats all students the same, Uses examples, and are older. At the  $p < .01$  level, these teachers are Confident, Control the pace of learning, Explain the subject clearly and effectively, are Friendly, and they Give students proper respect.

Additional correlations to the number of times that these teachers acted as cooperating teachers suggest ( $p < .05$ ) that they do not Maintain little control over the classroom, they Motivate students, See things from the students' point of view, are not Young. Correlations at  $p < .01$  suggest that the Cooperating teachers Aim to please students, Know the range of students' abilities, and are Mature.

### *Mentoring*

Two teacher questionnaire items about participants' experience as mentors to novice teachers or teachers who were new to the institution were included in the teacher survey. These questionnaire items produced twenty-five statistically significant correlations. These correlations with the participants experience as a mentor as well as the number of mentees create the final profile. The Mentoring teacher is ( $p < .05$ ) Confident, not Boring, Connects with students, Impressed students with knowledge, Knows a subject thoroughly, Motivates students, Pushes students to excel, does not have Students get away with careless work, and Teaches various methods of success. These teachers ( $p < .01$ ) Bring authority to the workplace, do not Aim to please students, Control class through teaching, Control the pace of learning, are not Disorganized, are Easy to understand, Explain the subject clearly and effectively, Give students proper respect, Incorporate new concepts well, Know the range of students' ability, are Mature, Move at a challenging pace, are Reasonable, See things from a students' point of view, Uses examples, and is not Young.



Table 9 Teacher types and behavioral correlations

	<i>P</i> < .05	<i>P</i> < .01
Principal rank	not Easily taken off subject (.389) Impresses students with knowledge (- .386) Knows the range of student abilities (- .389) does not Lack humility (.383) Maintains control over the classroom (.362) not Mean (.453) Uses examples (- .389) does not Want to be friends with students (.387) Willing to help (- .413)	Helpful (- .645) not Immature (.506) Professional towards all students (- .567) does not Want to fit in with students (.512)
Experience	not Boring (- .411) Controls the class through teaching (.509) not Disorganized (- .475) Gives students proper respect (.396) Knows the range of the students' abilities (.459) Maintains control over the classroom (- .443) Not quick to send students to the office (- .367) Strict enough (- .424) does not let Students get away with careless work (- .472) Students give extra effort (.416) Willing to help (- .382)	Brings authority to the workplace (.614) Confident (.626) Controls the pace of learning (.597) Easy to understand (.645) Explains the subject clearly and effectively (.607) Impresses students with knowledge (.674) Incorporates new concepts well (.721) Knows a subject thoroughly (.596) Mature (.723) Moves at a challenging pace (.597) Sees things from the students' points of view (.603) Uses examples (.545) not Young (- .720)
Cooperating	Controls the class through teaching (.346) not Disorganized (- .401) Impress students with knowledge (.381) Incorporate new concepts well (.418) Knows a subject thoroughly (.433) not Lenient (.343) Not quick to send students to the office (.403) Strict enough (- .359) Professional towards all students (.419) Reasonable (.420) Teaches various methods of success (.399) Treats all students the same (.506) Uses examples (.404) Maintains control over the classroom (- .451) Motivates students (.382) See things from the students' point of view (.350) not Young (- .386)	Aims to please students (.536) Confident (.564) Controls the pace of learning (.559) Explain the subject clearly and effectively (.465) Friendly (.463) Gives students proper respect (.588) Know the range of students' abilities (.479) Mature (.512)
Mentoring	Confident (.433) not Boring (- .363) Connects with students (.358) Impresses students with knowledge (.344) Knows a subject thoroughly (.403) Motivates students (.460) Pushes students to excel (.367) does not let Students get away with careless work (- .383) Teaches various methods of success (.383)	Bring authority to the workplace (.480) do not Aim to please students (.469) Control class through teaching (.463) Control the pace of learning (.569) not Disorganized (- .511) Easy to understand (.676) Explain the subject clearly and effectively (.605) Give students proper respect (.511) Incorporate new concepts well (.527) Know the range of students' ability (.583) Mature (.562) Move at a challenging pace (.583) Reasonable (.550) See things from a students' point of view (.514) Uses examples (.477) not Young (- .557)

Table 10 Common and unique behaviors among teacher types

Items	Prin	Exp	Coop	Ment
Aim to please students			x	
Bring authority to the workplace		x		x
Confident		x	x	
Controls the class through teaching			x	x
Controls the pace of learning		x	x	x
do not Aim to please students				x
does not Lack humility	x			
does not Want to be friends with students	x			
does not Want to fit in with students	x			
Easy to understand		x		x
Explain the subject clearly and effectively		x	x	x
Friendly			x	
Give students proper respect			x	x
Helpful	x			
Impresses students with knowledge	x	x	x	
Incorporate new concepts well		x	x	x
Know the range of students' ability	x		x	x
Knows a subject thoroughly		x	x	
Maintains control over the classroom	x		x	
Mature		x	x	x
Motivates students			x	
Move at a challenging pace		x		x
not Disorganized			x	x
not Easily taken off subject	x			
not Immature	x			
not Lenient			x	
not Mean	x			
Not quick to send students to the office			x	
not Young		x	x	x
Professional towards all students	x		x	
Reasonable			x	x
See things from the students' point of view		x	x	x
Strict enough			x	
Teaches various methods of success			x	
Treats all students the same			x	
Uses examples	x	x	x	x
Willing to help	x			

## CHAPTER 6

### DISCUSSION

This study was developed in an effort to explore Expertise in the classroom. In the process of defining teacher expertise, it became clear that there is significant research on competency and teacher expertise but there is little use of student perceptions in the definition of classroom expertise. I addressed this disparity by developing a four-pronged approach. First, I sought to examine the usefulness of student reported behavior and its viability for inclusion into an evaluative model for teachers. Second, the harmony or discord among the various criteria for determining teacher expertise was investigated. Third, the frequency of student-identified behavior was measured. And, finally, this study sought to identify recommended behaviors for inclusion into the professional repertoire of teachers.

In order to achieve these purposes and to study this phenomenon, I developed two instruments. The Student Descriptor Tool was utilized in Study One to measure the types of behaviors that are perceived as Expert, Novice, or Either. With the results from Study One, I developed the Teacher Behavior Checklist which was used to quantify teacher behaviors during classroom observations.

#### Conclusions

The student identified expert and novice behaviors are useful and in this present study have been validated by the correlations with the existing means of measurement and the resonance with the teacher expertise and student perception literature. High school students in Study One reported that they adjust their effort based on their perception of the level of the individual teachers' expertise. Their estimations of

expertise were determined by their perceptions and these perceptions of expert and novice behavior are indeed accurate, quantifiable, and useful in the evaluation of educators. While this may be a reasonable and likely explanation, there is also the variable to teacher reputation and student myths regarding ease or difficulty in working with a particular teacher.

There is consistency between several points in the literature and the Teacher Behavior Checklist developed from student interviews. Several of the student-generated behaviors from the checklist tool have been qualified as valid through various means. Confirmation through parallels with existing literature on teacher competency and expertise (Berliner, 2001; Kearney, Plax, Hays, & Ivey, 1991; Shulman, 1987) as well as the correlations in this study with the expertise designations of the literature review of Palmer, Stough, Burdenski, and Gonzales (2005) suggest that particular behaviors are exhibited or absent in teachers who are designated as experts. It may be interesting to examine the usefulness of including these behaviors into the behavioral repertoire of novice and experienced non-expert educators to examine the effect on student perception.

All behaviors from the checklist were observed except three items suggesting that the behaviors that students report are actual behavioral events in the observed high school classrooms. The number of occurrences in the ten most commonly observed items ranged from 111 times with a mean occurrence of 4.44 times per class period to 69 times with a mean occurrence of 2.76 times per class with five of these items producing statistically significant positive correlations with other items on the Teacher Behavior Checklist.

The correlation data (Table 7) between the seventy-five behavioral checklist items and the items of Unique behaviors observed, Total behaviors observed, Unique expert

behaviors, and Total expert behaviors set the stage for interesting inferences. According to these data, teachers who Control the class through teaching, Control the pace of learning, Connect with students, Explain the subject clearly and effectively, Know a subject thoroughly, are Easy to understand, Impress students with knowledge, Use examples, Brings authority to the workplace, and Know the range of students' ability are also likely to exhibit a greater frequency of expert behaviors. Further, teachers who Cater to "bad students," are Inconsistent with expectations, Immature , Childish, whose Students get away with careless work, are Not strict enough, Want to be friends with students, who Maintains little control over the classroom, are Disorganized, and Arrogant are likely to exhibit a greater variety of unique behaviors in the classroom. One hypothesis based on these data is that expert teachers draw from a narrower behavioral scheme than do non-expert teachers.

Data from this study indicate that significant correlations exist between various teacher expertise indices from the literature and the items found on the behavioral checklist developed through student interviews. As is reported in the case of Shelton, Lane, and Waldhart (1999), initial student reports of teacher behavior in the classroom were accurate and measureable. While not every behavior and characteristic could be observed, such as Easy grades, Gullible, and Shy, the other seventy-two behaviors that were observed with regularity within the class periods.

Statistically significant correlations suggest a difference among teachers of varying levels of expertise according to criteria from six different studies, principal nomination and rank, and variety and frequency of expert behaviors in the classroom. Among the various sources there is general harmony among criteria and normative

requirements. In the behavioral checklist none of the expert behavior items produced unexpected statistical significance while a few of the non-expert/novice behavioral items did produce statistically significant correlations. Perhaps most surprising in the data analysis was the lack of significant results found for thirteen of the expert behaviors. Of particular note are the items that have solid roots in the teacher competency literature as well as Expertise theory such as Has a plan for every class, Has all information memorized, and Not reliant on textbook. During the observations, these were some of the items that came up frequently for teachers and were some of the items that were noticeable and easily quantifiable.

#### Implications

Social recognition of expertise is greatly a matter of perception (Agnew, Ford, & Hayes, 1997; Palmer et al., 2005) albeit one that may contain quantifiable measures. Years of service, tenure, work as a cooperating teacher with a local university, and participating as a mentor are some indices of expertise in teaching (Palmer et al., 2005). Social recognition may not include particular quantifiable indices and include principal recognition, high regard by colleagues, and recognition by principal and colleagues. Student recognition of expert behavior is mentioned in only one of the twenty-six different articles reviewed by Palmer, Stough, Burdenski, and Gonzales (2005). In reviewing the data for this dissertation research, it may be suggested that student report of expert behavior is valid. Several points in the literature, as well as the multiple correlations found in this dissertation, have validated the Teacher Behavior Checklist created from interviews with high school students. It is my assertion there are meaningful data to be gleaned from students within the high school classroom.

On the other side of the desk, this study may be making a few suggestions regarding the evaluative views of the principals. The principal indication of expertise correlated with behaviors that directly addressed interactions with students rather than demonstrations of content knowledge. These data may suggest that principals regard teacher performance in a narrow scope that is relegated to classroom management. Shulman (1998) describes these issues as the challenge of the novice teacher. In the case of the more experienced educator, this focus may fail to capture other aspects of classroom performance. This narrow scope may be due to depth or style of principal training, lack of familiarity with faculty, lack of specific content area knowledge or fluency, or simply due to a lack of sufficient time to evaluate faculty in an in-depth manner. A lack of correlation with behavioral items that would suggest content knowledge or pedagogical skills may be a result of the choice of the researcher to allow principals to make these determinations based on their own indices of expertise rather than a standard framework. It would be worthwhile to revisit these determinations with the principals in order to understand the process behind the decisions. It may also be necessary to provide a set of indices for expert performance for the principals to use in their determination of expertise.

Principal expert designation and ranking did not reveal any statistically significant correlations with any of the measures of variety or frequency of behaviors in the classroom. Considering that these measures do suggest a difference among teachers, it is interesting that the principal indication and ranking of expertise had no relationship to these data.

The validity of this instrument is at its beginnings. The correlational data from the testing and formal phases of this study, along with the concurrence of information among principals, high school students, teacher competency literature, and Study One data suggest that the Teacher Behavior checklist may be useful in describing the activity of expert and non-expert teachers. While this is may not be a tremendous step, it is nonetheless a step in the validation of student perception of teacher expertise and its quantification in the real-world classroom.

#### Limitations and Delimitations

The schools observed in this study are non-traditional schools; one school is a boarding school and other school is a charter school. The background of professionals who choose to work in non-traditional schools may be different than those who choose to work in public schools. The type of student who attends these non-traditional schools may be different from those who attend public schools in the same city. The boarding school has admission requirements that include limits on family income and makeup as well as admission testing requirements. The public charter school has a code of conduct that includes a no-tolerance policy for violence of any kind, which may prevent certain students from attending this school and may restrict particular types of behavior. All of these factors may have an effect on the classroom dynamic and the manner in which teachers are free to act and interact within the course of their instructional time. Both schools are urban schools that may have dynamics that are dissimilar to other suburban and rural schools.

Participants included certified and noncertified teachers. Some teachers had received formal training as educators while some had not. Some possessed degrees and



training in their content area without attending a formal teacher education program. Further, some were trained educators working outside of their content area.

Generalizability of the results requires a number of restrictions. These restrictions include teachers of core content areas in non-traditional, urban, schools that hire both certified and non-certified faculty members. Faculty members may or may not have formal educational training or training in their content area. The schools followed traditional schedules and did not make use of block scheduling schemes during any of the observed class periods.

Educational specialists were not included in the potential participant pool. These content areas were visual art, music, health, physical education, and any other industrial arts courses offered. The decision to exclude these educators was made due to a lack of matching programs between the two schools that conflicted with the desire to observe classroom teaching experiences that were relatively similar from class to class.

#### Recommendations for future research

The earliest outlines for this study included plans for a focus group with students at each observed school. This focus group would discuss novice and expert perceptions much like the pilot group and develop a behavior checklist that was specific to the experiences of the students at that school. It would be interesting to establish this step in the research to examine the correlation of student listed behaviors to the established literature. It would also be interesting to quantify the frequency and variety of student listed behaviors in the classrooms of each specific school.

Considering that non-traditional schools were studied in this case, it would be helpful to both expand and restrict future research. By expanding the research to include

all sorts of schools in greater number, a result with an increased level of generalizability would be established and possibly more meaningful to educators in general. This option increases the number of variables from school to school while strengthening the similarities within the observations. Restricting the research to one type of school, in greater number, would allow for a focused analysis by maintaining a smaller number of specific variables from school to school. In this case, it may be more likely to account for the influence of these specific variables.

In a similar fashion, future research could expand or restrict itself in regard to the participants of the study. By including all types of teachers within a school or group of schools behavioral patterns and profiles may be revealed. By focusing on a specific content area as has been performed in other expertise research, particular behaviors of teachers and behavioral definitions by students may be revealed.

Inclusion of specialists, particularly in the arts, may bring about interesting results or interesting convolutions. As arts educators are expected to be practitioner educators, both administrators and students expect a different level of mastery in the classroom. It is likely that arts educators work within their content area in formal or informal contexts outside of the classroom. A great deal of research has been performed regarding the acquisition and measurement of expertise in these areas. Considering the amount of research performed in these specialty areas, the inclusion of student perception regarding teacher expertise may have the most interesting results. Trained educators in these areas are typically certified K-12 rather than their core-content counterparts who specialize among divisions.

This study was relegated to the high school divisions of the two participating schools. Likewise, the student interviews that were utilized in the development of the checklist were from high school students. The expansion of future work to include middle and elementary school divisions requires a great deal of care in order to gain authentic input from the students in order to create appropriate checklists for observation. While middle school students may create behavioral lists similar to those of the high school students, it may prove interesting to gather thoughts from elementary school students regarding the actions of expert and novice teachers.

Based on the information received from the principals, my thoughts returned to the pre-observational process. When establishing the reliability for the checklist tool, a second observer accompanied me into various classrooms. This second observer provided feedback at two different points in the process as we held speakaloud sessions to explain and examine our choices for ticks and non-ticks on the checklist. Questions about the checklist from the second observer provided ideas for inclusion and exclusion in future research. It would be interesting to include principals in each of the schools in the observation process. While this may not be practical from the standpoint of time and may raise questions within the evaluative constraints of various unions; the addition of a second observer provided a welcome level of input to the pre-research process.

Interesting, but likely not permissible, would be the inclusion of evaluative materials in the data collection. Principal and student evaluations of teacher performance and behavior from the same time as the observation would create a more complete picture of the teacher observed in each period and help to solidify the quantification of the observed behaviors.

Finally, the use of video may prove to be useful in the establishment of student perception in the evaluation and development of teacher expertise. Teachers of various stages of developing expertise could be videotaped and evaluated by researchers, students, and administrators alike. This would allow for various forms of multiple assessments and easily establish a level of reliability and validity among tools and observers. Follow up videos could feature these teachers implementing suggested behaviors to examine a change in expertise designation by various evaluators. A fully-produced series of videos could also be created that feature specific sets of behaviors across the range of developing expertise as a means to evaluate the perceptive abilities of observers. In this carefully scripted manner, the quantity, frequency and type of behaviors allow for a more complete evaluation of the observer and could serve as a tool for professional development of pre-service and in-service teachers. This video exploration may be used as a reflection tool for teachers as described by Sherin and van Es (2005).

Student perception and its roles in the evaluation of teacher expertise are virtually untapped. The possibilities for evaluation, usage, and quantification are many and are varied. With this study as a point of departure, it is the opinion of this researcher that this type of research be undertaken in earnest. The results of this study suggest that there are behaviors that are observed and reported by high school students that are recognized in the literature as valid expert and novice behaviors and further have been quantified through observation as actual behaviors that take place in the high school classroom. Self-report by high school students in the Study One data for this research state that students calibrate their efforts based on their perceptions of their teachers; whether they

believe that the teacher can be manipulated into changing grades or that the teacher is an 'easy grader' and hard work is not worth it. This disengagement of the learner is one that may be avoidable if this perception can be changed or even 'fooled' through the inclusion of these perceived expert behaviors into the behavioral repertoire of the novice and experienced non-expert teacher. That is to suggest that a novice teacher who is trained to include a repertoire of expert behaviors may improve student perceptions of competence and expertise potentially improving outcomes for all (Myers & Bryant, 2004).

#### What is expertise?

As was suggested in Berliner (1994; 2001), this dissertation research study has suggested criteria by which to discriminate between the expert teacher and the non-expert teacher. Where Berliner's (1994; 2001) research produced a hierarchical progression of behaviors, this study quantified specific behaviors that suggest a similar discrimination among educators at various stages. In the interest of capturing real-life expertise and representative tasks as described by Ericsson (1991), high school students were interviewed as witnesses to, or consumers of, these real-life situations and experiences. It is with these descriptions that the research was developed and implemented. Having performed many observations in a supervisory capacity in my career, it was an interesting experience to have a very specific set of behaviors to quantify in each observation. Nearly every behavior was observed throughout the research and these data suggest validity to the student report.

Expertise has been identified in this dissertation by the consonance between the literature and the perceptions of high school students in this study. The most highly correlating indices that come directly from this line of rationale were include in-class

behaviors that coincide with the first study discussed in chapter three of this dissertation. The items with correlation coefficients above .750 were selected in this first full version of this research in the interest of developing a hierarchy of habits (Bryan & Harter, 1899). Expert teachers connect with their students during class. They also control the pace of learning and control the class through teaching rather than through disciplinary means. Expert teachers are mature, having spent a greater amount of time in the classroom than have their colleagues. The expert teacher pushes students to excel, the students give extra effort, and they do indeed excel in the classroom. Experts explain content clearly and effectively and use examples to illuminate the content. Finally, expert teachers demonstrate a greater variety of expert behaviors and demonstrate those behaviors more often. It is my recommendation, based on these data, that student report be solicited in regard to teacher behaviors that are viewed as expert in order to improve outcomes in the classroom (Myers & Bryant, 2004; Shelton, Land, & Waldhart, 1999; Teven & McCroskey, 1996). Further, once these expert behaviors have been validated, that they be integrated into the teaching behavior repertoire. It is through the successful integration of effective behaviors that domain specific automaticity is achieved which gives way to freedom, understanding, and excellence in the domain of teaching; remembering that “automatism is not genius, but it is the hands and feet of genius” (Bryan & Harter, 1899, p. 375).

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## APPENDIX A

## STUDENT WORKSHEET—PILOT

Name \_\_\_\_\_

Grade \_\_\_\_\_

Age \_\_\_\_\_

Years at current school \_\_\_\_\_

Will you graduate from this school? \_\_\_\_\_

Are you going to college? \_\_\_\_\_

Field of interest \_\_\_\_\_

How would you define the word **novice**?

How would define the word **expert**?

How many teachers have you had in HS that you would consider **novices**? \_\_\_/\_\_\_

How many teachers have you had in MS that you would consider **novices**? \_\_\_/\_\_\_

How many teachers have you had in HS that you would consider **experts**? \_\_\_/\_\_\_

How many teachers have you had in MS that you would consider **experts**? \_\_\_/\_\_\_

In which of your HS and MS classes were your grades better: those with *novice* teachers or those with *expert* teachers? Why do you think that is?

Do you perform differently for *novices* than for *experts*? Any idea why?

Without naming names, think about a teacher that you have had in the past whom you would label a **novice**. Describe the methods that this teacher used in class. Use descriptive words or phrases to describe the ways that the teacher related to the students, taught the material, controlled the pace and discipline in the room.

Without naming names, think about a teacher that you have had in the past whom you would label an **expert**. Describe the methods that this teacher used in class. Use descriptive words or phrases to describe the ways that the teacher related to the students, taught the material, controlled the pace and discipline in the room.

Without naming names, think about a teacher that you've had in the past whom you would label **experienced** (*non-expert*). Describe the methods that this teacher used in class. Use descriptive words or phrases to describe the ways that the teacher related to the students, taught the material, controlled the pace and discipline in the room.



Imagine that you are about to begin taking three classes at a new school. You have been informed that one of your teachers is a “novice” teacher. What would you expect from this teacher?

Imagine that your next class is being taught by an “expert” teacher. What would you expect from this teacher?

Your third class is being taught by a teacher who is somewhere between novice and expert—this teacher is “experienced.” What would you expect from this teacher?

APPENDIX B

SPITE QUESTIONNAIRE—PILOT

**Status:** Student Instructional Faculty Residential Faculty Administrator

**Gender:** Male Female    **Age** \_\_\_\_\_ **Grade** \_\_\_\_\_ **Ethnicity** \_\_\_\_\_

In this questionnaire, you will respond to a series of descriptives. For each word or phrase provided, place an X in the space to indicate whether the description would best fit a teacher who is:

- Clearly a novice
- Possibly a novice
- Either a novice or an expert
- Possibly an expert
- Clearly an expert

Clearly a novice  
 Possibly a novice  
 Either a novice or an expert  
 Possibly an expert  
 Clearly an expert

1	Arrogant				
2	Demonstrates self-control				
3	Young				
4	Shy				
5	Argues with students				
6	Impresses students with knowledge				
7	Tall				
8	Professional towards all students				
9	Can be taken advantage of				
10	Tests appropriately				
11	Willing to help				
12	Well educated				
13	Sees things from the students' point of view				
14	Dependent on textbook				
15	Teaches various methods of success				
16	Controls the pace of learning				
17	Uses various assessment techniques				
18	Takes discipline matters into his/her own hands				
19	Doesn't want to "rock the boat"				
20	Adapts lessons to individual classes				
21	Easy grades				
22	Is from a different city				
23	Has a plan for every class				
24	Loves to teach				
25	Gullible				

In this questionnaire, you will respond to a series of descriptives. For each word or phrase provided, place an **X** in the space to indicate whether the description would best fit a teacher who is:

- Clearly a novice
- Possibly a novice
- Either a novice or an expert
- Possibly an expert
- Clearly an expert

Clearly a novice  
 Possibly a novice  
 Either a novice or an expert  
 Possibly an expert  
 Clearly an expert

26	Inconsistent with expectations					
27	Motivates students					
28	Beginner					
29	Recently hired					
30	Doesn't compromise themselves					
31	Lacks humility					
32	Moves at a challenging pace					
33	Boring					
34	Gives students proper respect					
35	Lots of experience in a particular field					
36	Controls class through teaching					
37	Speaks with an obvious accent					
38	Lenient					
39	Negotiable					
40	Varies teaching methods					
41	Maintains little control over the classroom					
42	Low self-esteem					
43	Not reliant on textbook					
44	Aims to please students					
45	Reasonable					
46	Has a second job					
47	Shows favoritism					
48	Students excel					
49	Explains material in one specific way					
50	Students feel like they are learning					

In this questionnaire, you will respond to a series of descriptives. For each word or phrase provided, place an **X** in the space to indicate whether the description would best fit a teacher who is:

- Clearly a novice
- Possibly a novice
- Either a novice or an expert
- Possibly an expert
- Clearly an expert

		<i>Clearly a novice</i>	<i>Possibly a novice</i>	<i>Either a novice or an expert</i>	<i>Possibly an expert</i>	<i>Clearly an expert</i>
51	Has an advanced degree					
52	Students get away with careless work					
53	Easy to understand					
54	Disorganized					
55	Unpredictable					
56	Explains subject clearly and effectively					
57	Mean					
58	Teaches over students' ability					
59	Wants to be friends with students					
60	Hard on students					
61	Immature					
62	Pushes students to excel					
63	Moves at a slow pace					
64	Lacks knowledge					
65	Knows range of students' ability					
66	Too strict					
67	Caters to "bad students"					
68	Helpful					
69	Has all information memorized					
70	Successful					
71	Gives appropriate work					
72	Coaches a sport					
73	Experienced					
74	Gives lots of detentions					
75	Loves their subject					

In this questionnaire, you will respond to a series of descriptives. For each word or phrase provided, place an X in the space to indicate whether the description would best fit a teacher who is:

- Clearly a novice
- Possibly a novice
- Either a novice or an expert
- Possibly an expert
- Clearly an expert

		<i>Clearly a novice</i>	<i>Possibly a novice</i>	<i>Either a novice or an expert</i>	<i>Possibly an expert</i>	<i>Clearly an expert</i>
76	Appropriately strict					
77	Knows the “game”					
78	Friendly					
79	Lets students sleep in class					
80	Confident					
81	Assigns lots of reading					
82	Wants to fit in with students					
83	Students give extra effort					
84	Mature					
85	Not quick to send students to the office					
86	Connects with students					
87	Not strict enough					
88	Tough					
89	Sturdy					
90	Easily taken off-subject					
91	Easy to talk to					
92	Veteran					
93	Brings authority to the workplace					
94	Childish					
95	Participates in after-school activities					
96	Knows a subject thoroughly					
97	Passionate about subject					
98	Uses examples					
99	Incorporates new concepts well					
100	Treats all students the same					

## APPENDIX C

## ITEMS RANKED BY MEAN

Item	Mean
Lots of experience in a particular field	4.317
Knows the "game"	4.268
Veteran	4.268
Not reliant on textbook	4.170
Experienced	4.170
Knows a subject thoroughly	4.024
Has all information memorized	3.975
Brings authority to the workplace	3.975
Controls class through teaching	3.951
Explains subject clearly and effectively	3.951
Knows range of students' ability	3.926
Controls the pace of learning	3.878
Passionate about subject	3.829
Demonstrates self-control	3.780
Students give extra effort	3.780
Students feel like they are learning	3.756
Has an advanced degree	3.731
Mature	3.731
Uses various assessment techniques	3.707
Appropriately strict	3.707

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Item	Mean
Professional towards all students	3.675
Easy to understand	3.658
Tests appropriately	3.634
Students excel	3.634
Teaches various methods of success	3.609
Takes discipline matters into his/her own hands	3.585
Incorporates new concepts well	3.585
Adapts lessons to individual classes	3.560
Confident	3.536
Sturdy	3.536
Uses examples	3.536
Gives appropriate work	3.512
Mean	3.195
Motivates students	3.175
Participates in after-school activities	3.170
Willing to help	3.146
Sees things from the students' point of view	3.146
Negotiable	3.146
Arrogant	3.024
Has a second job	3.024
Easy to talk to	3.024

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Item	Mean
Too strict	2.975
Assigns lots of reading	2.975
Tall	2.95
Boring	2.926
Lenient	2.926
Doesn't compromise themselves	2.9
Friendly	2.853
Teaches over students' ability	2.804
Gives lots of detentions	2.804
Lacks humility	2.780
Unpredictable	2.780
Speaks with an obvious accent	2.731
Is from a different city	2.707
Caters to "bad students"	2.625
Aims to please students	2.609
Shows favoritism	2.560
Easy grades	2.512
Doesn't want to "rock the boat"	2.439
Moves at a slow pace	2.439
Argues with students	2.365
Wants to be friends with students	2.292



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Item	Mean
Young	2.243
Explains material in one specific way	2.425
Students get away with careless work	2.219
Shy	2.195
Lets students sleep in class	2.146
Easily taken off-subject	2.146
Inconsistent with expectations	2.121
Recently hired	2.10
Wants to fit in with students	2.024
Not strict enough	2.024
Disorganized	2.00
Dependent on textbook	1.951
Low self-esteem	1.926
Gullible	1.85
Can be taken advantage of	1.829
Childish	1.804
Maintains little control over the classroom	1.775
Lacks knowledge	1.634
Immature	1.609
Beginner	1.536

## APPENDIX D

## ANOVA RESULTS

Sig	Item	Mean	Grp. 1	Grp. 2	Grp. 3	GMD	SD
0.000	Low self-esteem	2.06	1.59	2.40	2.83	1.24	.944
0.000	Disorganized	2.18	1.74	2.50	2.85	1.11	.896
0.001	Gullible	1.94	1.56	2.44	2.42	0.84	.810
0.002	Immature	1.72	1.44	1.60	2.38	0.78	.834
0.002	Tough	3.44	3.78	2.80	3.23	0.98	.837
0.004	Moves at a slow pace	2.52	2.22	3.00	2.77	0.78	.735
0.006	Doesn't compromise	3.04	2.63	3.33	3.69	1.06	1.040
0.008	Information memorized	3.82	4.11	3.90	3.15	0.96	.941
0.010	Not strict enough	2.16	1.85	2.40	2.62	0.77	.817
0.011	Hard on students	3.28	3.52	2.70	3.23	0.82	.757
0.016	Lacks knowledge	1.76	1.48	1.80	2.31	0.83	.870
0.020	Not reliant on textbook	4.04	4.37	3.90	3.42	0.95	.950
0.024	Students give extra effort	3.68	3.96	3.50	3.23	0.73	.844
0.025	Knows a subject thoroughly	3.92	4.15	4.10	3.31	0.84	.966
0.030	Well educated	3.34	3.52	3.30	3.00	0.52	.593
0.033	Students feel like they are learning	3.66	3.96	3.40	3.23	0.83	.917
0.034	Lots of experience in a field	4.18	4.37	4.30	3.69	0.68	.800
0.037	Demonstrates self-control	3.82	4.00	3.30	3.85	0.70	.748
0.045	Sturdy	3.48	3.74	3.20	3.15	0.59	.814
0.049	Participates in after-school	3.16	3.37	3.00	2.85	0.52	.681

Sig	Item	Mean	Grp. 1	Grp. 2	Grp. 3	GMD	SD
0.051	Has an advanced degree	3.66	3.93	3.40	3.31	0.62	--
0.058	Can be taken advantage of	1.90	1.70	2.00	2.23	0.53	--
0.059	Coaches a sport	3.34	3.56	3.00	3.15	0.56	--
0.060	Is from a different city	2.76	2.59	2.90	3.00	0.41	--
0.069	Passionate about subject	3.74	4.00	3.50	3.38	0.62	--
0.075	Has a second job	3.04	3.11	2.70	3.17	0.47	--
0.076	Childish	1.92	1.74	1.70	2.46	0.76	--
0.086	Friendly	2.90	2.78	2.90	3.15	0.37	--
0.087	Recently hired	2.20	2.04	2.10	2.62	0.58	--

Group 1 = High School students

Group 2 = College students

Group 3 = High School teachers and administrators

GMD=Greatest mean difference

APPENDIX E  
TEACHER BEHAVIOR CHECKLIST

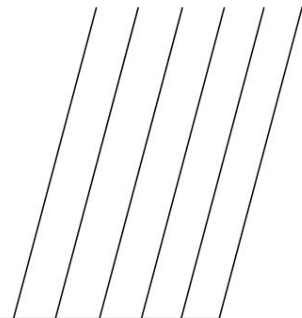
**First Name + Room number:** \_\_\_\_\_

**Gender:** Male Female      **Age** \_\_\_\_\_      **Subject** \_\_\_\_\_      **Ethnicity** \_\_\_\_\_

1	Arrogant							
2	Demonstrates self-control							
3	Young							
4	Shy							
5	Argues with students							
6	Impresses students with knowledge							
7	Professional towards all students							
8	Can be taken advantage of							
9	Willing to help							
10	Sees things from the students' point of view							
11	Teaches various methods of success							
12	Controls the pace of learning							
13	Uses various assessment techniques							
14	Takes discipline matters into his/her own hands							
15	Easy grades							
16	Has a plan for every class							
17	Gullible							
18	Inconsistent with expectations							
19	Teaches over students' ability							
20	Wants to be friends with students							
21	Hard on students							
22	Gives lots of detentions							
23	Gives appropriate work							
24	Has all information memorized							
25	Helpful							

**First Name + Room number:** \_\_\_\_\_

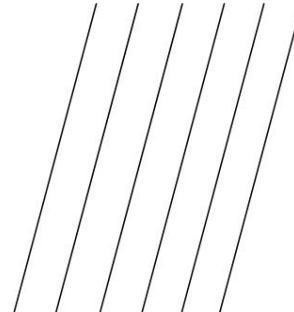
**Gender:** Male Female      **Age** \_\_\_\_\_ **Subject** \_\_\_\_\_ **Ethnicity** \_\_\_\_\_



26	Uncompromising						
27	Motivates students						
28	Lacks humility						
29	Moves at a challenging pace						
30	Boring						
31	Gives students proper respect						
32	Controls class through teaching						
33	Students get away with careless work						
34	Easy to understand						
35	Disorganized						
36	Appropriately strict						
37	Speaks with an obvious accent						
38	Lenient						
39	Negotiable						
40	Varies teaching methods						
41	Maintains little control over the classroom						
42	Low self-esteem						
43	Not reliant on textbook						
44	Aims to please students						
45	Reasonable						
46	Explains subject clearly and effectively						
47	Shows favoritism						
48	Students excel						
49	Explains material in one specific way						
50	Mean						

**First Name + Room number:** \_\_\_\_\_

**Gender:** Male Female      **Age** \_\_\_\_\_      **Subject** \_\_\_\_\_      **Ethnicity** \_\_\_\_\_



51	Treats all students the same							
52	Incorporates new concepts well							
53	Uses examples							
54	Knows a subject thoroughly							
55	Childish							
56	Brings authority to the workplace							
57	Easily taken off-subject							
58	Tough							
59	Not strict enough							
60	Connects with students							
61	Immature							
62	Pushes students to excel							
63	Moves at a slow pace							
64	Lacks knowledge							
65	Knows range of students' ability							
66	Too strict							
67	Caters to "bad students"							
68	Assigns lots of reading							
69	Wants to fit in with students							
70	Students give extra effort							
71	Mature							
72	Not quick to send students to the office							
73	Friendly							
74	Lets students sleep in class							
75	Confident							

APPENDIX F  
TEACHER AND PRINCIPAL QUESTIONNAIRE

Teacher form

**First Name + Room number:** \_\_\_\_\_

**Gender:** Male Female      **Age** \_\_\_\_\_      **Subject** \_\_\_\_\_      **Ethnicity** \_\_\_\_\_

1	Do you possess an education degree? Highest degree?	
2	Currently enrolled in college? List degree//program	
3	Number of years in current position:	
4	Number of years in this school:	
5	Number of years as an educator:	
6	Are you degreed in your content area? Highest degree?	
7	Memberships in professional teaching organizations?	
8	Have you worked as a cooperating teacher? How many times?	
9	Currently certified in content area?	
10	Do you mentor novice teachers?	



Principal form

**Principal name and school:** \_\_\_\_\_

**Gender:** Male Female      **Age** \_\_\_\_\_      **Subject** \_\_\_\_\_      **Ethnicity** \_\_\_\_\_

	First name + room number of instructor	Expert?
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

## APPENDIX G

## FREQUENCIES OF TEACHER BEHAVIOR CHECKLIST ITEMS

Item	Total
Aims to please students	12
Appropriately strict	51
Argues with students	2
Arrogant	47
Assigns lots of reading	2
Boring	14
Brings authority to the workplace	35
Can be taken advantage of	4
Caters to "bad students"	3
Childish	7
Confident	52
Connects with students	111
Controls class through teaching	86
Controls the pace of learning	79
Demonstrates self-control	26
Disorganized	17
Easily taken off-subject	22
Easy grades	0
Easy to understand	76
Explains material in one specific way	17
Explains subject clearly and effectively	79
Friendly	37
Gives appropriate work	42
Gives lots of detentions	2
Gives students proper respect	30
Gullible	0
Hard on students	14
Has a plan for every class	50
Has all information memorized	59
Helpful	77
Immature	6
Impresses students with knowledge	65
Inconsistent with expectations	28
Incorporates new concepts well	30
Knows a subject thoroughly	69
Knows range of students' ability	60
Lacks humility	3
Lacks knowledge	12
Lenient	62
Lets students sleep in class	12



Low self-esteem	1
Maintains little control over the classroom	33
Mature	6
Mean	4
Motivates students	82
Moves at a challenging pace	55
Moves at a slow pace	19
Negotiable	36
Not quick to send students to the office	9
Not reliant on textbook	64
Not strict enough	9
Professional towards all students	33
Pushes students to excel	49
Reasonable	58
Sees things from the students' point of view	59
Shows favoritism	22
Shy	0
Speaks with an obvious accent	2
Students excel	41
Students get away with careless work	10
Students give extra effort	28
Takes discipline matters into his/her own hands	37
Teaches over students' ability	5
Teaches various methods of success	27
Too strict	1
Tough	30
Treats all students the same	46
Uncompromising	11
Uses examples	92
Uses various assessment techniques	35
Varies teaching methods	62
Wants to be friends with students	46
Wants to fit in with students	75
Willing to help	64
Young	17

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