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SECONDARY INSTRUMENTAL MUSIC TEACHERS' EVALUATION OF

ESSENTIAL KNOWLEDGE AND SKILLS FOR SUCCESSFUL TEACHING

A DISSERTATION

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in partial fulfillment of the requirements for the

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By

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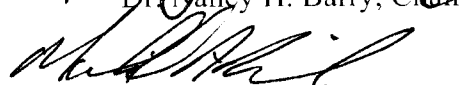
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A DISSERTATION APPROVED FOR THE
SCHOOL OF MUSIC

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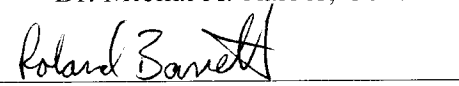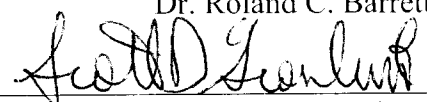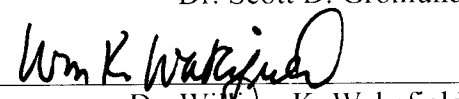
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My life and career to this point have been influenced by countless mentors, teachers, and friends. We never know what impact our lives will have upon others, and the names that follow are those of just a few who have helped guide me along the path to where I find myself today.

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Ben Timmons was one of my junior-high band directors. He was a strict taskmaster with a quick temper, but his love of music, his high standards, and the joy with which he shared his musical gifts with us sparked the idea within me to become a band director.

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I cannot describe the tremendous experience of going through a music program like the one at the University of North Texas. I was influenced by excellent faculty as an undergraduate and graduate student at UNT, but three professors stood out most. John Scott was my clarinet professor. I valued his thoughtful guidance, extraordinary musical skill and taste, and his continued support and friendship throughout my teaching career.

The greatest number of classes and ensembles in which I participated at UNT were under the direction of Dennis Fisher. I was in awe of Dennis's practical knowledge and skill in the classroom, and he remains a significant influence upon my approach to teaching at the college level. As a student, I always appreciated that Dennis was speaking from his own experience as a public school teacher, and I immediately recognized the applicability of his knowledge and skill to my young career.

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long as what you do makes you happy." Mom and Dad have been supportive and encouraging my whole life. Their financial and emotional support has made it possible for me to live my dreams.

Miles and Alison have been a blessing to our family. One can learn a lot from the wisdom of children, and they remind me every day what is really important in life. I am excited about our future together, and I look forward to the years ahead.

Most importantly, I must acknowledge the tremendous support and love my wife Sherry has given me. She is a caring mother, a devoted wife, and my most treasured friend. The adjustments and sacrifices she made during this process remind me that the things we give up along the way matter little, it is the people with whom we travel that are most important. I cannot imagine a better partner to walk with on this journey.

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ABSTRACT

This study investigates perceptions of secondary instrumental music teachers regarding the importance of knowledge and skills identified in research literature as being essential to professional success. A representative knowledge base was compiled by reviewing accreditation and certification organizations' guidelines, research studies, and music education textbooks. This list was reviewed by instrumental music education faculty ($N = 20$) from across the United States in order to establish content and construct validity of the knowledge and skill items.

This list of knowledge and skills was organized within a framework modeled after Schulman (1986, 1987) which reflects the complex nature of how the skills and knowledge are combined in the classroom. This philosophical framework organizes the areas of Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics, Pedagogical Content Knowledge, Knowledge of Educational Contexts, and Administrative Knowledge.

A pilot study of instrumental music teachers in Texas ($N = 60$) was completed, and revisions to the questionnaire and variables used in the main study were made. The final portion of the study asked band and orchestra teachers in secondary schools from across the United States ($N = 214$) to complete an anonymous, online survey ranking the relative importance of various knowledge and skills.

Respondents ranked Pedagogical Content Knowledge, Content Knowledge, and General Pedagogical Knowledge as the top three categories that contributed to their success. There were no significant differences in the rankings of any of the categories among various sub-groups. Significant interaction was observed between individual

importance ratings of specific skills within the major categories. The most notable

interaction was between the rankings of specific items in the Content Knowledge,

Curriculum Knowledge, and General Pedagogical Knowledge areas with the variables of

class assignment, experience level, and region of the United States.

Results of this study may help guide curriculum development of undergraduate

and graduate music-education programs as well as help inform continuing education for

teaching professionals.

I. INTRODUCTION

Secondary instrumental music teachers in public schools operate in a climate that is complex and at times overwhelming. The knowledge and skills necessary to provide effective instruction to students includes a wide variety of factual musical knowledge as well as performance skill on various instruments. Knowledge of students, general teaching skills, administrative skills, and an awareness of the ways most people learn most efficiently are essential to educators' success (Darling-Hammond, 2006). This complex combination of skills and knowledge operates in a distinct school and community climate that affects the selection and delivery of content.

If music teacher preparation programs are to help unravel the teacher attrition problem and produce educators who are effective teachers, these programs must acknowledge that the acquisition of a complex set of knowledge and skills necessary to function at a high level is a primary objective for their graduates. The juggling of these simultaneous responsibilities and skills within the complexities of campus, district, state, and federal expectations is often overwhelming to the novice teacher; the stress of maintaining balance among the skills and knowledge may be a contributor to the teacher attrition problem (National Commission on Teaching and America's Future, 2002). More than one third of new teachers leave the profession within three years, and nearly half are gone within the first five years (Pontic, Keating & Wilcox, 2003). After ten years, only about 20 percent of the teachers who enter the profession remain (Boreen & Niday, 2000). The teacher turnover rate is higher than for other professions (National Commission on Teacher and America's Future, 2002). This rate of departure, combined

with teacher retirement and increased student enrollment, will lead to an estimated

shortage of 2.7 million teachers by 2009 (Madsen, 2002).

An organized approach to teacher education that reflects the way knowledge and

skill in classrooms is put together might address problems of effectiveness and attrition.

A lack of cohesiveness in teacher-education programs is exacerbated by the dual mission

of music education programs and the compartmentalized nature preparing the musician-

teacher (Hoffman, 1988; Leonhard, 1985). The prevailing approach to music education

selects elements from the musician-training function of music-performance degrees and

grafts onto them the teacher-training facets of colleges of education (Leonhard, 1985).

Leonhard points out that these "hydraheaded monsters" often graduate a student whose

mastery of the various components of their programs is less than ideal:

> As the result of a long series of compromises, the present music teacher education
> program results in a human product whom applied music specialists consider less
> than adequate as a performer, whom musicologists consider deficient as a musical
> scholar, whom theorists view as lacking basic musicianship, and whom school
> administrators consider unprepared to relate music to the total school program (p.
> 11).

How do music education programs address this task of preparing graduates who

are sufficiently prepared to work with students in public schools? Music-teacher

educators need a comprehensive knowledge base – a compilation of "the entire repertoire

of skills, information, attitudes, etc., that teachers need to carry out their classroom

responsibilities" (Valli & Tom, 1988, p. 5). A knowledge base would help to organize

coursework in individual music education classes and help provide overall guidance to

the pathways students take through music education programs. The need for a knowledge

base has implications that are fundamental to music teacher education. Barnes (1989)

writes:

Those who teach teachers...must grapple with questions such as: What should beginning teachers who graduate from our preservice program of initial teacher education believe, know, and have the capacity to do? From what we know about teaching and learning, what should we expect these beginners to understand?(p. 20)

While a great deal of data have been generated since the 1930s related to the technical knowledge and skills practitioners and education faculty find essential, there has yet to be a comprehensive framework into which these skills can be placed to reflect the complex nature of daily life in the classroom (Leonhard, 1985). Many of the studies are isolated research into the individual components of effective teaching, and much of the general teacher-education effectiveness research centers around classroom management (Schulman, 1987). Valli and Tom (1988) point out that "only the vaguest outlines of a knowledge base framework" to organize the skill set necessary for teacher success exists in the research literature (p. 6).

The apparent lack of a suitable framework upon which to arrange the set of essential knowledge and skills does not mean that clearly defined elements of a knowledge base do not exist. Textbooks, dissertations, scholarly articles, accreditation guides, certification aides, and teacher exams contain specific lists of knowledge and skills that may be considered valuable additions to a knowledge base. Each of these contributes a fairly consistent list of knowledge and skills that have remained basically unchanged from the first studies in the 1930s (e.g., McEachern, 1937). The influence of national accreditation agencies, teacher certification guidelines, and teacher examinations all have influence upon the components of music-teacher education programs and influence the composition of a knowledge base for instrumental music teachers. Research into effective practice in music teaching and evaluations of practitioners' views of essential skills serve as other sources of components for a music-teacher knowledge base.

There are several published texts designed for use in music-teacher education and for the development of novice teachers that establish knowledge-base components.

According to Schulman (1986, 1987), the missing aspect in all of these compilations of knowledge and skill is an organizational framework that arranges teaching elements in a way that reflects how these skills are actually put to use in the classroom. In the late 1980s, Schulman proposed a framework for general teacher education that reflected how effective teachers combine various knowledge and skill components. Schulman (1987) categorizes the knowledge base for teachers into seven broad and interrelated areas:

- Content knowledge
- General pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter
- Curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers
- Pedagogical content knowledge - that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding
- Knowledge of learners and their characteristics
- Knowledge of educational contexts, ranging from the workings of the group or classroom, to the governance and financing of school districts, to the character of communities and cultures
- Knowledge of educational ends, purposes, and values and their philosophical and historical backgrounds (p. 4).

This framework has gained wide acceptance in education literature and has influenced contemporary definitions of teacher education programs as expressed through National Council for Accreditation of Teacher Education standards (National Council for Accreditation of Teacher Education, 2006), National Association of Schools of Music guidelines (Niermen, Zeichner, & Hobbel, 2002) and other teacher licensure organizations' publications in recent years (e.g., Interstate New Teacher Assessment and

Support Consortium, 1992). With little manipulation, Schulman's (1986, 1987) framework can quite adequately accommodate the elements used by effective music teachers. Schulman invites such an application of his framework to specific disciplines, such as music education, as the missing element of his overall framework (Schulman, 1986). Schulman argues that his general framework is more meaningful when it is applied to the specific elements of a discipline-specific teacher-education program (Schulman, 1986).

If elements of a knowledge base exist in the literature, and if the framework forwarded by Schulman (1986, 1987) is to be used as an organizing element that helps reflect what effective music teachers actually need to know and be able to do in their classrooms, then it must be validated by practicing teachers (Katz, Raths, Mohanty, Kurachi, & Irving, 1981). In order to validate individual knowledge base elements and the framework into which they are placed, practicing teachers should have the opportunity to evaluate and compare the elements included in such a system. Conceptual frameworks of this type have been shown to help solidify the vision and practice of experienced teachers (Kunzman, 2003).

Purpose of the Study

The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to professional success. The following research questions were developed:

1) Which knowledge and skills defined in research literature are thought to be most important to professional success by secondary instrumental music teachers?

2) How do variables related to respondents' teaching assignment and educational

background interact with the individual rankings of knowledge and skills defined

in the research literature?

Limitations of the Study

The participants for this study were drawn from band and orchestra directors in

public schools across the United States. This study did not include teachers who were

assigned to charter schools, home schools, alternative schools, magnet schools, or schools

associated with state correctional facilities. Only individuals who spent a majority of their

instructional day teaching band or orchestra in secondary schools provided information

for this study.

Internet access is another important factor that may have limited participation in

this study. The primary questionnaire instrument was available only online, and potential

participants needed access the internet to complete the survey. Individuals who did not

have convenient access to the internet may not have been able to participate in the study;

some low-socioeconomic status, inner-city, or isolated schools may have been

disproportionately excluded from participation.

The method of choosing potential participants for the study is another limiting

factor. Personal invitations to participate in the study were sent to a random sample of

band and orchestra teachers from across the United States. In an effort to help maximize

the response rate for the primary study, personalized e-mail invitations and personalized

post card invitations were sent to potential participants. These potential participants were

selected from a random sample of secondary schools compiled from state departments of

education and the National Center for Education Statistics. Director information was

gathered by searching for a particular school's website on the internet. If a band or orchestra director's personal information was not available on the internet, the next school from the overall list was selected. This selection method limited participation by excluding those directors whose information was not available on the internet. Schools that lack the financial or technological resources available to maintain an internet presence were thereby excluded from the study.

Since the main components of the study involve use of the internet and computer technology, including the main study questionnaire as well as the invitation to participate, there may have been a selection bias against an age group that feels less comfortable using this technology (Crossan, Matin, & Whittaker, 2001).

Another limiting factor was that no effort was made to include new or innovative teaching techniques. The main study questionnaire items were drawn from the existing body of research literature, teacher licensing and accreditation organizations' guidelines, and from music education textbooks. While many creative ideas and pilot programs are utilized in programs throughout the country, they remain beyond the scope of the present study.

Definition of Terms

Public School: An educational entity supported by public funds operated by a governmental agency and located in one or more buildings.

Secondary School: An educational entity whose enrollment includes students beyond elementary instruction and generally encompassing students in the range of grades 6 or 7 through 12.

Instrumental Music Teacher: An instructor whose primary teaching duties include the direct instruction of students' performance on wind, percussion, or string instruments.

Early Field Experience: In-school observation and instruction carried out in conjunction with a university-based music education program prior to the student-teaching practicum.

Region of the United States: A location description based on the six regional divisions of the Music Educators National Conference (MENC). The states included in each division are listed in Table 1. Participants in the study provided the first three digits of their postal service ZIP code which was converted into the appropriate MENC division.

Table 1. MENC regional divisions

Region	States
Eastern Division	Connecticut, Delaware, Maryland, Maine, Hew Hampshire, Massachusetts, New York, New Jersey, Rhode Island, Pennsylvania, Vermont
North Central Division	Illinois, Iowa, Indiana, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
Northwest Division	Alaska, Idaho, Montana, Oregon, Washington, Wyoming
Southern Division	Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, West Virginia
Southwestern Division	Arkansas, Colorado, Kansas, Missouri, New Mexico, Oklahoma, Texas
Western Division	Arizona, California, Hawaii, Nevada, Utah

(Music Educators National Conference, 2007)

Content Knowledge: Knowledge related to factual musical knowledge including performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

General Pedagogical Knowledge: Knowledge related to the general teaching and presentation skills that all teachers, regardless of subject, seem to possess. Some of the elements in this area include classroom management, presentation, and communication skills, as well as the establishment of class routines.

Curriculum Knowledge: Knowledge of specific techniques and commonly adopted schools of thought related to delivery of instruction including method books, literature selection, and specific schools of technique. Knowledge of the sequences related to how most people learn music most efficiently is also included in this category.

Knowledge of Learners and Their Characteristics: Skill and knowledge related to the awareness of the social, physical, and psychological development levels of students and how these characteristics influence decisions made in the classroom. Knowledge of learning styles, entry points, and diversities of all kinds are characteristic components related to this category.

Pedagogical Content Knowledge:

…the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction. Pedagogical content knowledge is the category most likely to distinguish the understanding of the content specialist from that of the pedagogue (Schulman, 1987, p. 8).

The skills representing this category separate the professional musician from the professional music educator; teachers must possess a different perspective of musical knowledge in order to combine their music skills and knowledge with a working knowledge of learners and their backgrounds and prior experiences in order to communicate musical concepts most effectively.

Knowledge of Educational Contexts: The awareness of the special characteristics of the school, district, community, and national expectations and customs as they relate to

the delivery of instruction. Working with parents, administrators, colleagues, and the community are included in this category.

Administrative Knowledge: Items dealing with the management of financial, travel, inventory, and student information within the guidelines of campus, district, state, and federal requirements to support instruction are classified in this category.

Organization of the Study

Chapter II of this study provides a review of the literature related to the historical and sociological development of the concept of a knowledge base in general education. The makeup and organization of the Schulman (1986, 1987) framework is used to frame the remainder of the chapter as various elements of the knowledge base are assembled. Individual elements that contribute to the knowledge base are drawn from a review of state and federal guidelines as expressed through accreditation organizations, teacher certification guidelines, and teacher licensure exams. Research related to practicing teachers' views of the essential knowledge and skills, research concerning competing views of administrators, music faculty, and practitioners, and studies of separate components of music education programs are reviewed as they relate to the knowledge base content. Finally, the content of contemporary music education textbooks is reviewed as a potential source for knowledge-base material.

Chapter III outlines the design of the study. Specific research questions and the independent and dependent variables are presented. The method of establishing reliability and validity of the elements of the knowledge base and the placement of the elements into categories within the conceptual framework are presented next. The development of

the main questionnaire is documented followed by a description of the methods of

selecting the population of the pilot study and the main study.

Chapter IV outlines the statistical procedures used to answer the research

questions presented in Chapter III and presents the results of those analyses. A discussion

of the data analysis and implications for further research are presented in Chapter V.

II. REVIEW OF THE LITERATURE

The review of the literature related to this study is divided into three broad sections. In the first section, an overview of the development, context, and content of a knowledge base in general teacher education is reviewed. In section two, a philosophical framework will be presented into which the various components of a knowledge base in music education might be placed. In the final section, the influences upon and development of a knowledge base for music teachers is investigated with particular emphasis on the knowledge, skills, and dispositions found to be essential for instrumental music education.

A knowledge base has been defined as "the entire repertoire of skills, information, attitudes, etc., that teachers need to carry out their classroom responsibilities" (Valli & Tom, 1988, p. 5). Schulman (1987) provides a broader definition of the knowledge base as "a codified or codifiable aggregation of knowledge, skill, understanding, and technology, of ethics, and disposition, of collective responsibility" (p. 1). The definition of a teaching knowledge base is complicated because of the complex nature of the teaching act. Recommendations for the inclusion of items in a sufficiently broad knowledge base are driven by the analysis and application of complex skills by practicing educators.

The development of a knowledge base concept in teacher education is intertwined with the political and social events of the second half of the twentieth century, and an investigation of three questions drives the following segment of the literature review: What was the historical impetus for the concept of a knowledge base for teachers? Is

there justification for the concept of a knowledge base? If there is such a thing as a knowledge base for teachers, what might its constituent components be?

The Development of a Knowledge Base in General Education

The concept of a knowledge base in the United States is rooted in socio-political events of the twentieth century's last seventy years. The following section traces the historical background for the development of a knowledge base, describes the complexity involved in the teaching act, and explains how the complex nature of teaching invalidates simple checklists of teacher skills and knowledge.

Historical Background

The concept of the delineation of a definitive knowledge base in general education is not without controversy (Dill, 1990), and the constituent parts of knowledge bases have been driven in large part by forces external to education. These forces contributed to a recurring call for accountability among students and the teachers who were charged with their education (Bunting, 1999). In the early part of the twentieth century, the aura of introspection following World War I, the lack of consistency in accreditation practices for teachers, and the variation in the content and practices of medical schools led to the first wave of reforms (Leonhard, 1985). In music, this trend was represented by the first reviews of music education curricula in the United States (McEachern, 1937; Wolfe, 1937). The failure of the United States in the battle to beat the Soviet Union into space during the 1950s ushered in a "back to basics" movement in this country that turned attention back to student and teacher accountability (Bunting, 1999; Crone, 2002).

The military fears of the 1950s were replaced by economic threats in the 1980s as the Reagan administration reintroduced the emphasis on teacher and student accountability (Crone, 2002, p. 81). These economic worries sparked a report by the National Commission of Excellence in Education (1983) that rocked the educational world by refocusing attention on the performance of students in math and science coursework. This report, *A Nation at Risk,* was followed in close succession by a report by the Holmes Group (The Holmes Group, 1986) and the Carnegie Forum on Education and the Economy (1986). These publications called for a professionalization in the training of teachers and ushered in a wave of standards-based teacher education programs (Soltis, 1987). Teachers and teacher education programs came under closer scrutiny amidst this climate of increased accountability for students. Following the logic of the time, if one could only quantify the standards by which teachers, teacher education programs, and public-school students could be measured, each of these groups could be held accountable for their contributions to the overall progress toward the goals of economic competitiveness. In teacher education, these accountability measures evolved into the concept of a standardized knowledge base for education professionals (Ayers & Berney, 1989; Keoppell, 1990).

In the more recent past, the George W. Bush administration's No Child Left Behind Act (United States Department of Education, 2002) has focused attention not only on the performance of students in the classroom, but on the preparation and qualifications of classroom teachers (Darling-Hammond, 2005). A basic requirement of the legislation is that schools hire only "highly qualified" teachers (Darling-Hammond, 2005). This requirement has refocused the professionalization movement in teacher education

resulting in a renewed emphasis on the delineation of a knowledge base for teacher education.

The specific content of a knowledge base for teachers has been a continuing topic for researchers throughout the last half of the twentieth century (Ayers & Berney, 1989). Embraced by politicians and administrators as a means of objectively assessing teachers' knowledge and skills, the concept of a knowledge base has been heralded as a tool that helps unite teachers as a profession (Keoppell, 1990).

Inherent Problems in Defining a Knowledge Base

Clifford and Guthrie (1988) write "the proposition that subject-matter mastery (as it is now acquired) is sufficient to empower one with the knowledge of either what or how to teach is so well contradicted in everyday experience that we must reject it" (p. 324). A definition of expertise, and thus the components of a knowledge base, based on technical skill alone "overlooks the decisions professional make about whether and when to employ a particular skill" (Kennedy, 1987, p. 5).

Despite general agreement in the concept of a knowledge base in general education, the specific components have often been less well explained in part because of the complexity of the teaching act. It seems likely that there is a knowledge base for teaching that can be defined (Good, 1990); however, the research is "ambiguous" and "lacks close examination" (Keoppell, 1990, p. 35). A primary reason that little substantive research has been completed in the area of knowledge bases for education is the complexity of the teaching act itself (Good, 1990). Out of necessity, and because of the original task-oriented nature of the knowledge bases of the 1980s, much of the

research has concentrated on those items that are more easily quantifiable and manipulated statistically.

Unfortunately for those who wish to quantify good teaching, the mastery of content knowledge amongst teachers is not enough to ensure their success in the classroom (Davidson, Moore, Sloboda, & Howe, 1998). Good (1990) adds that "we know that teaching success is not achieved through the artful mastery of a few variables but rather that instructional excellence involves the coordination of many aspects of instructional process in curriculum" (p. 21). In reality, there are a virtually unlimited number of variables that affect teaching. This fact has implications in teacher education: if education faculty are to become more than trainers of technicians, if they desire to become teachers of educators, the knowledge base may need to be defined in a way that is more than a checklist of skills.

The quantity of items in a knowledge base for general teacher education quickly multiplies to a size that is difficult to organize and digest. In fact, the very nature of the teaching act lacks the neat structure implied by a tidy knowledge base. That the complex nature of teaching sometimes eludes those involved in teacher education programs is part of the problem of defining a knowledge base. Schulman (1987) writes:

> Indeed, properly understood, the actual and potential sources for a knowledge base are so plentiful that our question should not be, Is there really much one needs to know in order to teach? Rather, it should express our wonder at how the extensive knowledge of teaching can be learned at all during the brief period allotted to teacher preparation (p. 7).

Even if every component necessary for success in the classroom could be listed, the combination of these skills in what Berliner calls the "ill-structured domain" of the classroom remains an important contributor to teacher success (1986, p. 13). Berliner points to the fact that while our knowledge base may have an outward structure, the

reality of classroom complexities and how that knowledge is put into practice by teachers overshadows the knowledge base's apparent efficiency.

A lack of communication among policy makers, researchers, teacher educators, and teachers in the field is another reason that a truly useful knowledge base is illusive. Master teachers have an implicit knowledge and often are so adept at teaching in a complex environment they are unable to decipher exactly what they do. The "wisdom of practice" is "the least codified of all….Practitioners simply know a great deal that they have never even tried to articulate" (Schulman 1987, pp. 11-12). General guidelines and axioms of teaching delivered in the halls of academia often fall flat in the complex real world (Bresler, 1993; Brule, 1985).

An accurate knowledge base would be exceedingly complex because the worlds of teaching are remarkably rich with variables, some of which are difficult to identify, and many of which are completely uncontrollable (Leinhardt & Greeno, 1986). Because of the complexity of knowledge bases, they may never be complete; there is "no such entity as 'the one knowledge base for professional education'" (Pankratz, 1989, p.24).

Some researchers have found that novice teachers, even those who have mastered their respective content area knowledge, are overwhelmed by the complexity of the teaching activity (Leinhardt & Greeno, 1986). Darling-Hammond (2006) describes how this complexity is intertwined with the concept of a usable knowledge base for teaching that reflects the complexity of defining effective teaching:

If teachers are viewed primarily as purveyors of information, perhaps they need little more than basic content knowledge and the ability to string together comprehensible lectures to do an adequate job....But if teachers must ensure successful learning for students who learn in different ways and may encounter a variety of difficulties, then teachers need to be diagnosticians and planners who know a great deal about the learning process and have a repertoire of tools at their disposal. In this view, teaching requires a professional knowledge base that informs decisions about teaching in response to learners (p. 80).

What Darling-Hammond describes above focuses on the art and craft of teaching that is often neglected in an outline of a teaching knowledge base. In this view, ownership of factual knowledge by teachers is not sufficient alone to ensure effective learning (Valli & Tom, 1988; Grimmett & MacKinnon, 1992). Grimmett and MacKinnon write that "craft knowledge emphasizes judgment - often in aesthetic terms - rather than following the maxims of research-generated knowledge" (p. 428). That something complex is going on during effective classroom performance by teachers need not be dismissed as ethereal. Researchers caution their readers to avoid the trap of dismissing teachers' skillfulness as "mere practice" that cannot be codified (Berliner, 1986 p. 13). If this skillfulness is an important factor, it should figure prominently in the organization of the knowledge base.

Recommendations for a Knowledge Base

Some definitions for a useful knowledge base go beyond a list of knowledge and skills teachers should possess; these descriptions acknowledge the decision-making and sociological relationships involved in the delivery of content. One of the practical questions Pankratz (1989) asks of a teacher education knowledge base is if it provides "the essential knowledge that will enable graduates to make informed professional decisions about their behavior regarding key teaching functions identified (i.e., planning, implementation, instructional evaluations, management of student behavior, etc.)" (pp.

38-40). In spite of the acknowledgement that successful educators often fail to appreciate the complex skills they utilize while teaching (Schulman, 1987), knowledge bases should be practitioner driven, validated by practice, and not rely solely upon the results of research (Pankratz, 1989; Valli & Tom, 1988).

A Philosophical Framework for a Knowledge Base in Music Education

Before presenting a compilation of individual components of a knowledge base for music education, a framework into which the essential knowledge and skills is presented. The review of accreditation components, governmental guidelines, teacher certification requirements, practitioner surveys, comparison studies between practitioners and others involved in the development of a knowledge base, and music education textbooks which follows produces a laundry list of knowledge, skills, and attitudes researchers and policymakers feel are essential to the success of instrumental music teachers. Practitioner studies have found that teachers in the field generally agree that all of the components listed in the literature are relatively important, and that they were relatively well prepared in the factual knowledge portions of their undergraduate programs (Colwell, 1985). Most studies reviewed below lack a method for integrating the individual skills and knowledge within the complex task of teaching (Colwell, 1985). In an effort to both organize this sizeable list of knowledge, skills and dispositions and to somehow indicate and evaluate the more complex aspects of these elements, researchers have developed frameworks into which these items can be placed.

In order to be effective, research must be grounded in a philosophical framework (Colwell, 1985). A philosophical framework is necessary in order to understand the

realities of the complex "ill-structured domain" of teaching (Berliner, 1986, p. 13).

Barnes (1989) writes that "sound teaching judgments…must be rooted in deep

understandings of teaching, learning, learners, and subject matter, and how these factors

interrelate in the teaching-learning process" (p. 13). Barnes (1989) describes the "forms

of knowing" that must be called upon to teach one's subject matter:

> Knowing what concepts, ideas, and principles make up the primary content of the discipline; knowing how the discourse within a discipline relates to the teaching of school subjects and knowing how fundamental principles and ideas can be transformed into appropriate and useful representations that make these ideas comprehensible to learners (p. 17).

One of the most influential frameworks in the last two decades of the twentieth

century was that developed by Schulman (1986, 1987). While Schulman's work has been

increasingly incorporated into teacher-certification guidelines and accreditation

procedures, his work is cited as an area into which more music-education research is

needed (Niermen, Zeichner, & Hobbel, 2002). Schulman categorizes the knowledge base

for teachers into seven broad and interrelated areas:

- Content knowledge
- General pedagogical knowledge, with special reference to those broad principles and strategies of classroom management and organization that appear to transcend subject matter
- Curriculum knowledge, with particular grasp of the materials and programs that serve as "tools of the trade" for teachers
- Pedagogical content knowledge - that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding
- Knowledge of learners and their characteristics
- Knowledge of educational contexts, ranging from the workings of the group or classroom, to the governance and financing of school districts, to the character of communities and cultures
- Knowledge of educational ends, purposes, and values and their philosophical and historical backgrounds (1987, p. 4)

This framework has influenced contemporary definitions of teacher education

programs as expressed through National Council for Accreditation of Teacher Education

standard (2006), National Association of Schools of Music (NASM) guidelines

(Niermen, Zeichner, & Hobbel, 2002), and other teacher licensure organizations'

publications in recent years (e.g., Interstate New Teacher Assessment and Support

Consortium, 1992). With little manipulation, Schulman's categories can hold the

elements of music education quite adequately. Each of these categories is described

below as it relates to the music-education practitioner.

Content Knowledge

This area contains elements related to factual musical knowledge including

performance skills on primary and secondary instruments, music theory, analysis,

arranging, music history, instrument fingerings, repair, and conducting skills. As

Niermen, Zeichner, and Hobbel (2002) note, Content knowledge is a primary focus of

music-teacher education:

> Teacher education in music, with its emphasis on content knowledge, seems to be
> substantially different from teacher preparation programs in other disciplines, in
> which methods, curriculum, psychology, and philosophy courses are the core of
> preprofessional preparation (p. 826).

Traditionally structured undergraduate music courses help solidify content knowledge

through performance classes, aural skills, analysis, composition, arranging,

improvisation, repertory, literature, history, and conducting (Niermen, Zeichner, &

Hobbel, 2002).

General Pedagogical Knowledge

This category contains elements related to the general teaching and presentation skills that all teachers, regardless of subject, seem to possess. Some of the elements in this area include classroom management skills, establishment of routines, presentation, and communication skills. As a result of the "professionalization agenda," these components of general education are receiving more emphasis in many music teacher education programs. (Niermen, Zeichner, & Hobbel, 2002, p. 826)

Curriculum Knowledge

This area includes knowledge of specific techniques and commonly adopted schools of thought related to delivery of instruction including method books, literature selection and specific schools of technique. Knowledge of the sequences related to how most people learn music most efficiently is also included in this category.

Knowledge of Learners and Their Characteristics

This category includes skill and knowledge related to the awareness of the social, physical, and psychological development levels of students and how these characteristics influence decisions made in the classroom. Knowledge of learning styles, entry points, and diversities of all kinds are characteristic elements of components related to this category.

Pedagogical Content Knowledge

Perhaps the most unique and least understood category of Schulman's framework

involves *Pedagogical Content Knowledge*. It has been described as representing

> the blending of content and pedagogy into an understanding of how particular
> topics, problems, or issues are organized, represented, and adapted to the diverse
> interests and abilities of learners, and presented for instruction. Pedagogical
> content knowledge is the category most likely to distinguish the understanding of
> the content specialist from that of the pedagogue (Schulman, 1987, p. 8).

The skills representing this category separate the professional musician from the

professional music educator; teachers must possess a different perspective of musical

knowledge in order to combine their music skills and knowledge with a working

knowledge of learners, their background, and their prior experiences in order to

communicate those concepts most effectively. Good (1990) distinguishes between subject

matter knowledge alone and pedagogical content knowledge in this way:

> Subject matter knowledge involves teachers' understanding of a particular subject
> (for example, biology), whereas pedagogical content knowledge indicates
> teachers' abilities to use effectively (from the knowledge they possess about a
> subject) those ideas that are important to teach to students at a particular grade
> level (p. 40).

This area includes the useful representation of musical concepts that teachers use

to communication musical concepts in relationship to the conceptions and

misconceptions students have regarding those concepts. Selecting appropriate literature

based on musical development, identifying potential performance problems in new

musical literature selections, and diagnosing solutions to performance problems are all

examples of *Pedagogical Content Knowledge* in the music classroom.

Knowledge of Educational Contexts

　　Knowledge of Educational Contexts includes an awareness of the special characteristics of school, district, community, and national expectations and customs as they relate to the delivery of instruction. Working with parents, administrators, colleagues, and the community are included in this category. This category can be thought of as the contextual box in which the other categories interact in the effective classroom. This box influences the operations of the other skill and knowledge sets in such a way that techniques which work in one educational setting may be inappropriate in others.

Administrative Knowledge

　　A significant number of skills derived from the literature review cover extra-instructional issues dealing with the administrative aspects of running a secondary instrumental music program. Items dealing with the management of financial, travel, inventory, and student information within the guidelines of campus, district, state, and federal requirements to support instruction were classified in this category. While not a discrete element of Schulman's framework, *Administrative Knowledge* remains an important factor in the success and implementation of secondary instrumental music programs.

　　The interrelationships among the Schulman categories, as well as the added *administrative knowledge* category, can be visualized in Figure 1[1]. The areas of *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge*, and *Knowledge of Learners and Their Characteristics* overlap each other to create an area in the center of

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[1] Other visualizations of Schulman's framework can be found in Veal and MaKinster (1999).

the chart that represents *Pedagogical Content Knowledge*. This arrangement

acknowledges the interrelated nature of these areas and represents how *Pedagogical*

Content Knowledge may be visualized as a combination of the other four areas of

knowledge. *Administrative Knowledge* is represented in Figure 1 as the foundation that

supports the workings of the five overlapping pedagogical areas. Figure 2 represents

another view of the arrangement of these knowledge and skill areas. Figures 1 and 2 are

identical except for the perspective from which they are viewed: Figure 1 is looked upon

from above, and Figure 2 is a front view of the organizational structure. Figure 2

represents the support function that *Administrative Knowledge* serves; while

Administrative Knowledge is not directly related to classroom instruction, it serves as a

support platform upon which the other five areas rest. *Knowledge of Educational*

Contexts serves as an all-encompassing box in which the five pedagogical areas and

Administrative Knowledge rest.

Figure 1. A graphic representation of the organization of Schulman's (1986, 1987)

knowledge-base framework viewed from above
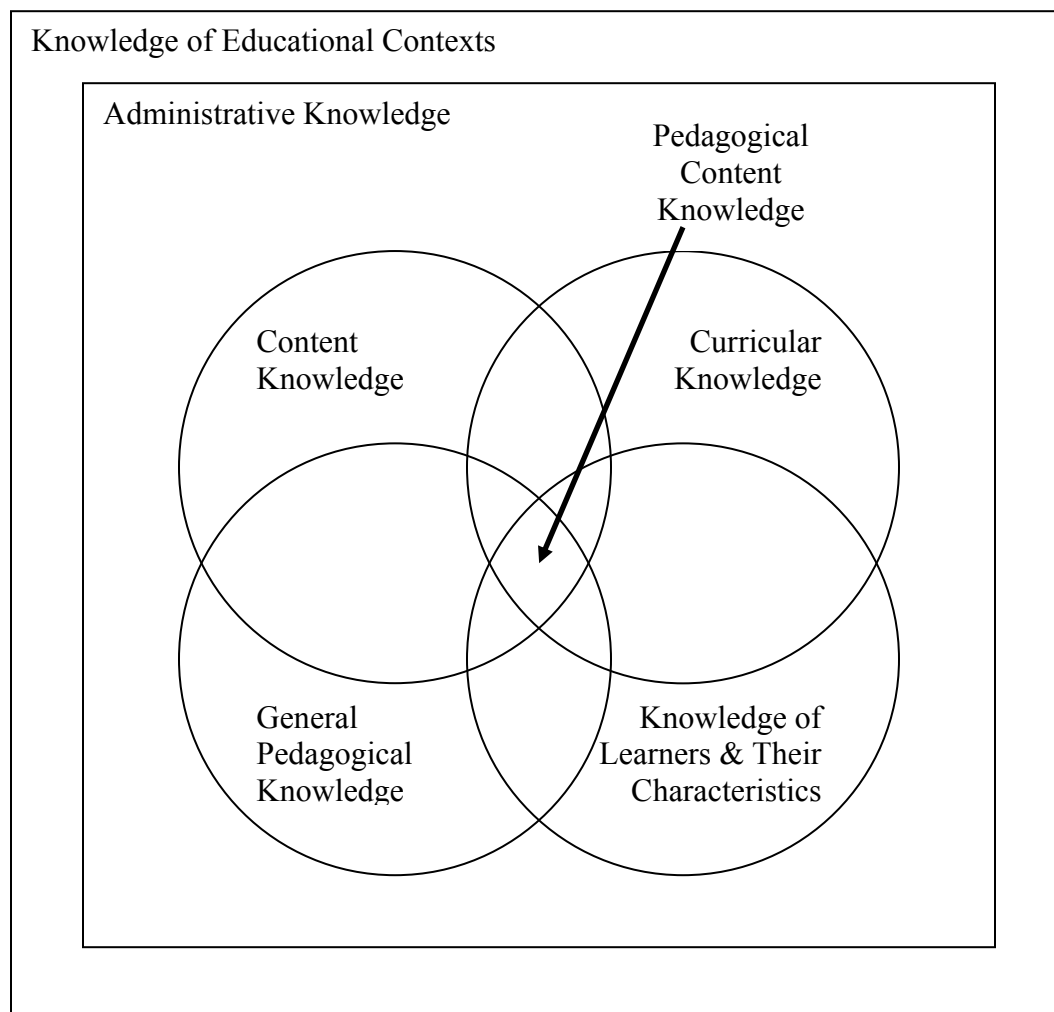
Figure 2. A graphic representation of the organization of Schulman's (1986, 1987)

knowledge-base framework viewed from the front
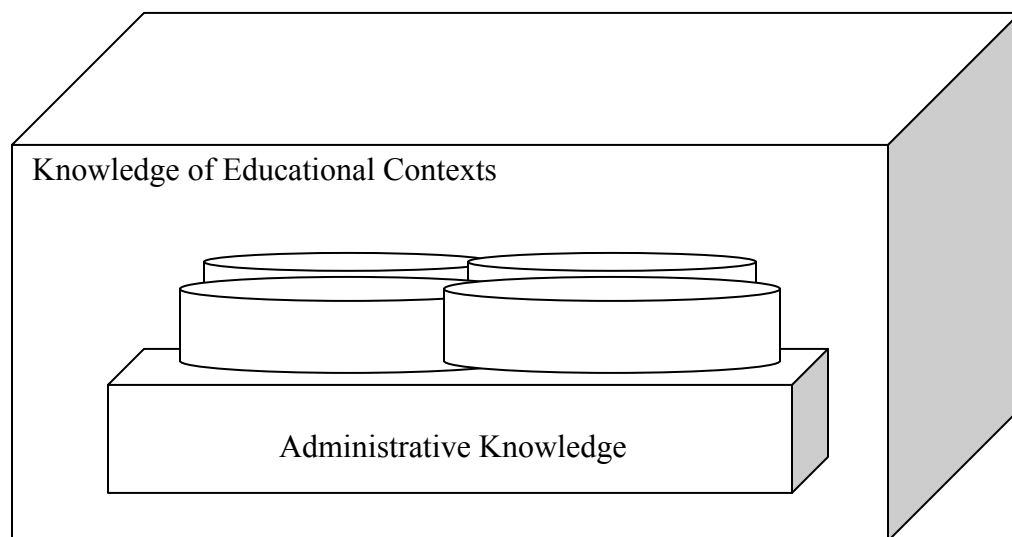
Although the original design of knowledge bases was driven by extra-educational

forces and resulted in fairly basic lists of teacher knowledge and skills, more recent work

has developed a framework that could help more accurately describe the intricate ways in

which teachers actually utilize these skills in the classroom. The requisite knowledge and

skills for music educators have been documented and validated by practitioners, but often

in only a cursory way that does not accurately describe the intricacies of the secondary

music teacher's daily work (Bresler, 1993). By framing the knowledge and skills that

have been introduced in the literature in a framework based on Schulman's work,

practitioners may be able to more accurately and realistically assess the knowledge base

that is most essential to their success.

There is precedent for categorizing music-educator knowledge and skills using a version of Schulman's framework in Queensland, Australia (Ballantyne & Packer, 2004). This research team attempted to gauge the relative importance of essential knowledge and skills in music education and how participants felt they were prepared by their undergraduate programs. The researchers in this study framed twenty-four areas of knowledge and skills into four of the general areas based on Schulman's categories: *Music Knowledge and Skills*, *Pedagogical Content Knowledge and Skills*, *General Pedagogical Knowledge and Skills*, and *Non-pedagogical Professional Knowledge*. Factor analysis confirmed that each skill variable loaded into the corresponding organizing category. Ballantyne and Packer (2004) also used a technique called Importance-Performance Analysis in order to graph the relationship between how each skill was rated in usefulness and how well participants felt they were prepared to use these skills. The researchers found that the relevance of most undergraduate coursework was low, and that all twenty-four areas were ranked at least "moderately important" with mean scores above 3.3 on a five-point Likert-type scale. Most items that were rated in the "high-importance, low-performance" areas were those related to *Pedagogical Content Knowledge*. The second quadrant – "low-performance, lower-importance" included *Non-pedagogical Professional Knowledge and Skills*; however, each item still received at least a moderately high importance rating. This study indicates that *Pedagogical Content Knowledge* is valued as an important component of the knowledge base for music teachers.

The Development of a Knowledge Base in Music Education

Once an educationally sound framework has been acknowledged, one can begin to collect the constituent items within each category of that framework. A representative knowledge base for music education can be drawn from accrediting organizations, teacher examinations, research into effective music-education practice, and textbooks used in music education coursework. National accreditation organizations, research into effective music-teacher practice, and the publication of textbooks designed for pre-service and novice teachers have helped form a complex and lengthy set of knowledge, skills, and attitudes for music teachers (Meske, 1985).

Accreditation and Certification Organizations' Influence

Accrediting organizations are slowly shifting the organization of their evaluation materials to a framework similar to that of Schulman (1986, 1987) that acknowledges the complexity of the teaching process above the acquisition of basic content knowledge. The National Council for Accreditation of Teacher Education (NCATE) has led the way with an expansion of its requirements beyond the acquisition of content knowledge and teaching techniques (National Council for Accreditation of Teacher Education, 2006). Other national organizations, especially the Interstate New Teacher Assessment and Support Consortium (INTASC, 1992) and the National Board for Professional Teaching Standards (NBPTS, 2001) have also responded to the call for an expanded view of a knowledge base. The Educational Testing Service's PRAXIS III (Educational Testing Service, 2005a) examination for music teachers is another national examination in which content is being expanded to provide a broader view of teacher skill. Each of these areas

continues to contribute to the tidal forces at work driving music education curricula across the nation (Boardman, 1990). The National Association of Schools of Music (NASM) influences music-teacher education programs in its role as the official accrediting agency recognized by NCATE (National Council for Accreditation of Teacher Education, 2006, p. 17-18). A development of a knowledge base for music education must consider each of these accrediting group's contributions. Even though not all of these organizations hold a direct influence on music education programs, they each carry a tremendous weight of influence in music-teacher preparation and govern the speed at which these programs may or may not change (Colwell 1985; Funk, 1977; Thiessen & Barrett, 2002).

National Council for Accreditation of Teacher Education

The National Council for Accreditation of Teacher Education (NCATE) is the official accrediting agency for university programs that prepare teachers, administrators, and other school personnel in the United States (National Council for Accreditation of Teacher Education, 2006). While music programs do not come directly under its influence, NCATE does have an impact upon music-teacher education in that it accredits most of the colleges of education in which music education students complete coursework. NCATE publishes a knowledge base, skill set, and list of dispositions that a teacher should possess in order to be successful (Niermen, Zeichner, & Hobbel 2002). The most recent standards published by NCATE show an organizational and taxonomic shift that represents the influence of Schulman's (1986, 1987) work on a knowledge base that moves beyond basic knowledge and skills. The NCATE accreditation standards are grouped into six groups. The first standard area – *Candidate Knowledge, Skills, and*

Dispositions – is the only one that directly addresses teacher-candidate performance:

"Candidates preparing to work in schools as teachers…know and demonstrate the

content, pedagogical, and professional knowledge, skills, and dispositions necessary to

help all students learn. Assessments indicate that candidates meet professional, state, and

institutional standards" (National Council for Accreditation of Teacher Education, 2006,

p. 14).

Descriptions of "unacceptable, acceptable," and "target" candidates are then

described in the following areas:

    (1) content knowledge for teacher candidates,
    (2) pedagogical content knowledge for teacher candidates,
    (3) professional and pedagogical knowledge and skills for teacher candidates,
    (4) dispositions for all candidates, and
    (5) student learning for teacher candidates (National Council for Accreditation of
        Teacher Education, 2006, pp. 14-17).

As a description of the ideal teacher candidate, the "target" goals are listed in the

following ways:

Content Knowledge:

Teacher candidates have in-depth knowledge of the subject matter that they plan to teach as described in professional, state, and institutional standards. They demonstrate their knowledge through inquiry, critical analysis, and synthesis of the subject. All program completers pass the academic content examinations in states that require such examinations for licensure (National Council for Accreditation of Teacher Education, 2006, P. 14).

Pedagogical Content Knowledge:

Teacher candidates reflect a thorough understanding of pedagogical content knowledge delineated in professional, state, and instructional standards. They have in-depth understanding of the subject matter that they plan to teach, allowing them to provide multiple explanations and instructional strategies so that all students learn. They preset the content to students in challenging, clear, and compelling ways and integrate technology appropriately (National Council for Accreditation of Teacher Education, 2006, p. 15).

Professional and Pedagogical Knowledge and Skills:

Teacher candidates reflect a thorough understanding of professional and pedagogical knowledge and skills delineated in professional, state, and institutional standards. They develop meaningful learning experiences to facilitate learning for all students. They reflect on their practice and make necessary adjustments to enhance student learning. They know how students learn and how to make ideas accessible to them. They consider school, family, and community contexts in connecting concepts to students' prior experience and applying the ideas to real-world problems (National Council for Accreditation of Teacher Education, 2006, p. 15).

Dispositions for All Candidates:

Candidates work with students, families, and communities in ways that reflect the dispositions expected of professional educators as delineated in professional, state, and institutional standards. Candidates recognize when their own dispositions may need to be adjusted and are able to develop plans to do so (National Council for Accreditation of Teacher Education, 2006, p. 16).

Student Learning:

Teacher candidates accurately assess and analyze student learning, make appropriate adjustments to instruction, monitor student learning, and have a positive effect on learning for all students (National Council for Accreditation of Teacher Education, 2006, p. 16).

The NCATE standards clearly reflect an expanded view of the knowledge base teachers should possess as they enter the profession, but they lack a description of how these goals would be accomplished and in what ways they might be measured. This criticism is not unique to NCATE, and this apparent ambiguity allows for a much-desired degree of academic freedom on the part of college of education faculty (Colwell, 1985).

National Association of Schools of Music

The National Association of Schools of Music (NASM) is recognized by NCATE as the official accreditation agency for schools of music (National Council for Accreditation of Teacher Education, 2006, p. 17-18). As with NCATE, NASM guidelines list desirable knowledge, skills, and dispositions of graduates. The list is divided into four

categories: *desirable attributes, music competencies, teaching competencies, and professional procedures*. Specific competencies are listed below:

    a. Desirable Attributes. The prospective music teacher should have:

(1) Personal commitment to the art of music, to teaching music as an element of civilization, and to encouraging the artistic and intellectual development of students, plus the ability to fulfill these commitments as an independent professional.

(2) The ability to lead students to an understanding of music as an art form, as a means of communication, and as a part of their intellectual and cultural heritage.

(3) The capability to inspire others and to excite the imagination of students, engendering a respect for music and a desire for musical knowledge and experiences.

(4) The ability to articulate logical rationales for music as a basic component of general education, and to present the goals and objectives of a music program effectively to parents, professional colleagues, and administrators.

(5) The ability to work productively within specific education systems, promote scheduling patterns that optimize music instruction, maintain positive relationships with individuals of various social and ethnic groups, and be empathetic with students and colleagues of differing backgrounds.

(6) The ability to evaluate ideas, methods, and policies in the arts, the humanities, and in arts education for their impact on the musical and cultural development of students.

(7) The ability and desire to remain current with developments in the art of music and in teaching, to make independent, in-depth evaluations of their relevance, and to use the results to improve musicianship and teaching skills (National Association of Schools of Music, 2005, pp. 83-84).

b. Music Competencies:

(1) *Conducting.* The prospective music teacher must be a competent conductor, able to create accurate and musically expressive performances with various types of performing groups and in general classroom situations. Instruction in conducting includes score reading and the integration of analysis, style, performance practices, instrumentation, and baton techniques. Laboratory experiences that give the student opportunities to apply rehearsal techniques and procedures are essential.

(2) *Arranging.* The prospective music teacher should be able to arrange and adapt music from a variety of sources to meet the needs and ability levels of school performing groups and classroom situations.

(3) *Functional Performance.* In addition to the skills required for all musicians, functional performance abilities in keyboard and the voice are essential. Functional performance abilities in instruments appropriate to the student's teaching specialization are also essential.

(4) *Analysis/History/Literature.* The prospective music teacher should be able to apply analytical and historical knowledge to curriculum development, lesson planning, and daily classroom and performance activities. Teachers should be prepared to relate their understanding of musical styles, the literature of diverse cultural sources, and the music of various historical periods….

(6) *Essential competencies and experiences for the instrumental music teaching specialization are:*

a. knowledge of and performance ability on wind, string, and percussion instruments sufficient to teach beginning students effectively in groups;

b. experiences in solo instrumental performance, as well as in both small and large instrumental ensembles;

c. laboratory experience in teaching beginning instrumental students individually, in small groups, and in larger classes (National Association of Schools of Music, 2005, pp. 84-85).

    c. Teaching Competencies. The musician-teacher should understand the total contemporary educational program—including relationships among the arts— in order to apply music competencies in teaching situations, and to integrate music instruction into the total process of education. Essential competencies are:

    (1) Ability to teach music at various levels to different age groups and in a variety of classroom and ensemble settings in ways that develop knowledge of how music works syntactically as a communication medium and developmentally as an agent of civilization. This set of abilities includes effective classroom and rehearsal management.

    (2) An understanding of child growth and development and an understanding of principles of learning as they relate to music.

    (3) The ability to assess aptitudes, experiential backgrounds, orientations of individuals and groups of students, and the nature of subject matter, and to plan educational programs to meet assessed needs.

    (4) Knowledge of current methods, materials, and repertories available in various fields and levels of music education appropriate to the teaching specialization.

    (5) The ability to accept, amend, or reject methods and materials based on personal assessment of specific teaching situations.

    (6) An understanding of evaluative techniques and ability to apply them in assessing both the musical progress of students and the objectives and procedures of the curriculum (National Association of Schools of Music, 2005, p. 85).

National Teacher Certification Guidelines

While certification guidelines vary from state to state, there have been regional and national influences that drive components of a knowledge base in music education (Crone, 2002). The Interstate New Teacher Assessment and Support Consortium (INTASC) developed guidelines for a common core of knowledge and skills that should be possessed by all new teachers (Interstate New Teacher and Support Consortium, 1992). It listed eight general principles that were followed by the knowledge, performances, and dispositions that would reflect requirements in each of those areas.

These lists are performance-based statements and do not reflect course requirements but instead lay out what teachers should know and be able to do. The principles are:

(1)   The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

(2)   The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

(3)   The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

(4)   The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

(5)   The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

(6)   The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

(7)   The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

(8)   The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

(9)   The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

(10) The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well-being (Interstate New Teacher Assessment and Support Consortium, 1992, pp. 14-34).

The National Board for Professional Teacher Standards (NBPTS) maintains guidelines that outline the requirements for certification in music (2001). Anecdotal evidence suggests that participation in the NBPTS program is regional and often reflects the amount of financial support that state governments give to participating teachers in the program. In areas where National Board Certification does not carry with it any financial reward, participation is generally found to be lower. In states where NBPTS certification is backed financially, their guidelines remain significant influences upon practicing teachers.

While the NBPTS guidelines are not expressly designed around the Schulman (1986, 1987) categories, they do reflect a definition of music-teacher education that acknowledges the importance of skills beyond the acquisition of content knowledge. They are divided into eight broad areas:

1) Knowledge of students
2) Knowledge of and skills in music
3) Planning and implementing assessment
4) Facilitating music learning
5) Learning environments
6) Valuing diversity
7) Collaboration
8) Reflection, personal growth, and professional contribution (National Board for Professional Teacher Standards, 2001, pp. 7-46)

The growing influence of National Board certification must be considered when evaluating components of the knowledge base for secondary music educators.

PRAXIS III Teacher Certification Exams

The PRAXIS III Performance Assessments are national tests that address a more complex view of teaching in specific subject areas. Although objective-style questions of content-level knowledge are represented in these tests, there is evidence of a desire to move beyond an assessment of basic factual knowledge to more complex skills of beginning teachers across all grade levels and content areas. The PRAXIS III music assessments consist of tests in three parts: Music Analysis, Music Content Knowledge, and Music Concepts and Processes.

The Music Analysis assessment instrument is divided into a segment in which test takers listen for performance errors along with a second section in which musical scores are to be analyzed. The listening portion asks examinees to identify imbalance among instruments, incorrect accents, incorrect articulation, and incorrect interpretation of dynamics or tempo markings (Educational Testing Service, 2005b). The analysis portion assesses the participants' ability to identify the difficulty level of two musical excerpts, identify the stylistic influences in those experts, and to identify potential performance problems or musical concepts represented in the excerpts. In addition, they are required to describe rehearsal techniques that would help students overcome challenges in the excerpts or how the excerpts could be used to teach music concepts (Educational Testing Service, 2005b).

The Music Content Knowledge PRAXIS III examination measures content knowledge in the areas of music history and literature, music theory, performance, music pedagogical concepts from kindergarten through twelfth grade, and professional practices of music education (Educational Testing Service, 2005c). As its name implies, it focuses

entirely on content knowledge and lacks application beyond recall and identification.

Each of these segments is described below:

I. Music History and Literature

- Stylistic characteristics (such as melody, rhythm, harmony, texture, and dynamics) associated with music of the major historical periods and with Jazz, other American popular music, and world musics

- Composers

- Genres

- Music literature

II. Music theory

- Compositional organization, such as pitch, including scale types and harmony; rhythm; texture; form; expressive elements, such as dynamics, articulation, tempo, and timbre

- Basic aural skills: intervals, chords, scales, rhythms, melodies

III. Performance

- Musical instruments, sound production, instrumentation of standard ensembles

- The singing voice, vocal production, voicing of standard ensembles

- Electronic media, such as computers and synthesizers

- Conducting

- Score reading

- Improvisational techniques

- Acoustical considerations involving rehearsal and performance rooms

- Critical listening and performance error recognition

IV. Music Learning, K-12

- Course offerings, music program objectives, curriculum planning and development

- Course content: Psychomotor, cognitive, and affective behaviors, conceptual elements of music, learning sequences, performance skills appropriate to grade level, evaluation of students

- pedagogical approaches, selection of appropriate vocal and instrumental methods, classroom management skills, technology for the music classroom

V. Professional Practices

- Philosophy of music education

- Professional literature: journals, reference works, other source materials

- Professional practices and ethics

- Professional organizations (Educational Testing Service, 2005c)

The final portion of the PRAXIS III battery is the Music Concepts and Processes test. This test requires students to compose two essays that address problems of instrumental or vocal performance techniques and the presentation of a musical concept (Educational Testing Service, 2005d).

While many of the items listed as requirements on teacher exams and graduation requirements are based on effective teaching research, this research has tended to ignore important variables in order to establish a foundation for the identification of the components of effective teaching (Schulman, 1987). Definitions of good teaching produced by such research "became items on tests or on classroom-observation scales" (Schulman, 1987, p. 6). Schulman adds that test and observation criteria "were accorded legitimacy because they had been 'confirmed by research.' While the researchers

understood the findings to be simplified and incomplete, the policy community accepted them as sufficient for the definitions of standards" (Schulman, 1987, p. 6).

Research Investigating Essential Skills for Instrumental Music Educators

The influence of national accreditation agencies, teacher certification guidelines, and teacher examinations all have influence upon the components of music-teacher education and influence the composition of a knowledge base for instrumental music teachers. Research into effective practice in music teaching and evaluations of practitioners' views of essential skills serve as another sources for components of the music-teacher knowledge base.

Practitioner Surveys of Essential Knowledge and Skills in Music Education

Several studies have attempted to survey practitioners, administrators, and college faculty in an attempt to compile a knowledge base for music education. A brief overview is provided of some of these studies in an attempt to show important similarities.

Cooper (1994) surveyed college band-methods teachers and high-school band directors to identify the most essential areas, topics or emphases for courses of the core curriculum in instrumental music education. Another focus of the study was to identify areas of the undergraduate curriculum that were not useful to the current teaching practices of the surveyed directors. A majority of the high-school directors who responded were critical of their music methods courses and expressed a desire for more field experiences, the development of better rehearsal skills, a deeper knowledge of band literature, and for higher admissions standards for music education majors. The directors

rated highest those courses that were pedagogical or practical in nature; this reflects practitioners' value in the application of knowledge over the acquisition of basic facts. Some of the valued areas included technology, working with booster organizations, business skills and fundraising, jazz ensemble methods, marching band techniques, and job-search techniques. Specific conducting skills were identified by these high-school directors as particularly essential. Rehearsal skills and techniques, rehearsal evaluation, and ensemble error detection were particularly valued. Cooper (1994) also mentions that many directors' skills were acquired implicitly through their participation in courses outside the music education sequence such as warm-up routines, musical phrasing, and the development of band sound.

Lofgren (1974) surveyed 112 music teachers in Texas to discern their views on a knowledge base for music education. The respondents were randomly selected practitioners in three areas: elementary general music ($n = 36$), secondary vocal ($n = 22$), and secondary instrumental ($n = 54$). The researcher developed a list, reviewed by music supervisors across the state, of sixteen broad areas of expertise. Within the broad areas were listed ninety specific sub-statements. Participants were asked to rate each skill listed on a Likert-type scale that ranged from "of negligible value" to "indispensable." Sixteen competencies were rated as "indispensable:"

- Demand excellence in performance situations
- Make judicious use of budgeted funds
- teach the importance of listening to blend, balance, and intonation
- anticipate problem spots in a score after a brief review
- detect, diagnose, and plan remediation for inappropriate tone production

- prepare and direct musical programs for parents and public

- justify, intelligently, to administrators requests for school expenditures

- recruit students for membership in performing groups

- deal with disciplinary problems confidently and aggressively

- conduct auditions in a manner that produces valid and reliable results without needless injury to those who do not fare well

- establish rapport with students in settings other than the music classroom

- suit a musical selection to an intended purpose

- identify the musical strengths of individual students and provide reinforcement for demonstration of those strengths

- explain concepts of performance for all instruments to be utilized

- relate to parents' concerns and circumstances

- perform all tasks necessary for participation in U.I.L. [statewide music] contests

No competency received a mean rating of less than "helpful." Participants were also asked to pick the top ten competencies from the entire list. Two competencies were selected by over fifty percent of the instrumental music teachers:

- teach the importance of listening to blend, balance, and intonation

- demand excellence in performance situations.

Wolfersberger (2001) sought to develop a list of exemplary practices of instrumental music teachers by drawing upon the input of a panel of exemplary junior-high school instrumental music teachers in the San Joaquin Valley of California. After leading focus groups with these directors, a list of 140 practices was developed and then validated by a review of junior-high principals. The items on this list were categorized

into the categories of (1) teacher behaviors, (2) motivational strategies, (3) generic teaching strategies, (4) music teaching strategies, (5) music preparation, (6) organization, (7) assessment strategies, (8) district resources, and (9) community resources (Wolfersberger, 2001, pp. 295-6).

Jennings (1988) sought to develop a list of competencies for high-school band directors by asking them to rank how frequently they used a list of forty-eight skills developed by the researcher. The directors ($N = 299$) were also asked to assess the effectiveness of their pre-service education by listing which courses contributed most to the development of the listed skills. In addition, a comparison was made between the high-school and college ensemble directors' ($N = 21$) opinions regarding these competencies. The study found significant agreement between collegiate ensemble directors' ranking of skills with high-school directors' rankings. The following courses were listed in rank order from most to least useful: (1) student teaching, (2) band, (3) methods courses, (4) conducting, (5) applied lessons, (6) jazz ensemble, (7) techniques courses, (8) marching band, (9) orchestration and arranging, (10) music theory, and (11) music history.

Follow-up studies of music education graduates commonly employ knowledge bases for music education. These studies range from regional, state, to reviews of specific programs. Table 2 summarizes the focus of the research in those areas.

Table 2. Follow-Up Studies of Music Education Graduates

Author	Subjects
Aebischer, 1967	University of Oregon
Anderson, 1960	Ohio public school teachers
Baird, 1955	San Jose State College
Bates, 1971	Louisiana public school teachers
Bennett, 1975	North Texas State University
Boyce, 1973	Graduates of four colleges in Utah
Clinton, 1962	Graduates from Texas colleges
Cody, 1968	Texas public school teachers and administrators
Corbett, 1977	Graduates from Kansas universities
Darnell, 1963	Murray State College
Duvall, 1970	Graduates from Colorado institutions
Elsass, 1956	University of Texas
Finley, 1969	Jacksonville State University
Fisher, 1969	Oklahoma State University
Franklin, 1971	South Carolina
Jang, 1988	Graduates from Republic of Korea institutions
Lacy, 1985	Graduates from historically Black colleges and universities
Logan, 1983	Grand Canyon College

Table 2 (cont.)

Follow-Up Studies of Music Education Graduates

Author	Subjects
Marks, 1994	Graduates from California institutions
Mathis, 1962	Illinois Wesleyan University
Meaux, 2004	Graduates from Texas institutions
Medley, 1974	Graduates from Texas institutions
Miralis, 2002	Graduates from Big Ten institutions
Peterson, 1956	"Outstanding" graduates across the U.S.
Prince, 1968	University of Illinois
Raessler, 1968	Graduates from Pennsylvania, Maryland, New Jersey
Schafer, 1977	Graduates of California institutions
Shires, 1990	North Central Arizona University
Simmons, 1979	Lamar University
Stoll, 1960	University of Utah
Thomas, 1981	Claflin College
Wagner, 2005	Graduates from an unidentified university
Wilson, 1958	The Ohio State University
Wolf, 1974	North Central Arizona University
Woodard, 1963	University of Colorado

The vast majority of these studies asked survey respondents to rank the usefulness of a list of skills and knowledge and then to rate the effectiveness of their undergraduate preparation in each of these areas. A common tendency of these studies employing Likert-type ratings of essential knowledge and skills is that most of the items are rated highly by participants and therefore fail to provide a clear understanding of the ranking of the skills. If every skill is rated "very important" or "important," then it is difficult to

discern which elements might deserve more attention in music-teacher development

(Colwell, 1985). When asked to rate their performance in these areas, few teachers

surveyed seemed willing to report themselves as poor teachers because of inadequate

preparation by their undergraduate institutions (Colwell, 1985).

The fact that each item is rated at least "moderately important" in many of these

surveys may be the result of the overwhelming number of skills that are to be evaluated

by busy practitioners. If the list of knowledge and skills is broken down and analyzed

within categories, survey respondents might provide more insight into the relative

weighting of these essential knowledge and skills.

Comparison Studies of Essential Knowledge and Skills in Music Education

Comparison studies also report on the essential skills and knowledge that music

educators should possess. When researchers compare the opinions of music education

faculty, school administrators, and music education practitioners, a discrepancy between

theory and practice is often noted (Keoppell, 1990).

Two studies from the 1930s are of particular relevance to the current study

(McEachern, 1937; Wolfe, 1937). One of the first studies to recommend music education

coursework based on practitioner needs was that of McEachern (1937). The study

attempted to compare criteria developed by outstanding music education faculty with the

practice of music education practitioners. A sample of 370 teachers from thirty-nine

states was asked to rank items on a list of teaching and administrative skills developed by

the panel of expert education faculty. These teachers were asked how adequately each of

the skills was addressed in their undergraduate programs. Teachers were also asked what

items should be added to undergraduate programs. McEachern found that situational

factors related to individual teaching assignments were significant in their influence upon the relative value of the skills identified as important by music-education experts, and that the grade level and experience level of the teachers contributed most significantly to their opinions. The missing elements in the list of skills derived by the panel of experts were the situational and experiential factors related to the teaching assignments.

A comparison of music administrators', superintendents', and music teachers' opinions of the usefulness of undergraduate music education components was completed by Wolfe (1937). Most graduates felt well prepared in their music coursework, but expressed a wish for more instruction in conducting, orchestral instruments, orchestra and band instrumentation, using and selecting musical materials for junior-high and senior-high instrumental courses, and methods for senior-high instrumental music. Graduates also expressed a need for a longer student-teaching experience. Over a third of the practitioners recommended more applied music study. Graduates also recommended more extensive preparation in the areas of starting beginners, selecting material for soloists, and a greater acquaintance with teaching methods and materials.

Studies of Separate Components of Undergraduate Preparation Programs

While the reality of teaching may be that numerous skills and knowledge are combined simultaneously during effective teaching, the individual elements of the knowledge base are most often studied in an isolated fashion. Thiessen and Barrett (2002) reflect the current trend in general teacher-education literature in their support for preparation of beginning music teachers "based on an expanded image of what teachers do" (p. 761). Research into the essential elements of music teaching in the secondary schools has involved teaching, administrative, and musical elements; for the most part,

these elements have been investigated separately (Leonhard, 1985). While the possession of musical knowledge and performance skills alone is insufficient in insuring the success of a teacher, these elements have been studied separately and constitute a portion of the knowledge base.

Elements of a music-education knowledge base may be drawn from the extensive research into separate components of the typical music-education degree program. Many undergraduate students fail to appreciate the interconnectedness of their undergraduate curricula and thereby fail to appreciate how they might use the knowledge and skills in their own teaching (Hoffman, 1988). Instead of viewing the music theory component of their careers as "how music works" and how the music history component functions as "how music works over time when performed," the various components are seen, and are often taught, as isolated segments (Hoffman, 1988, p. 7). One of the frequently maligned segments of undergraduate curricula is coursework in colleges of education. If these courses are to be appreciated by undergraduates, they need to be viewed not as "a subject matter, but rather a way of dealing with subject matters" (Hoffman, 1988, p. 8). Nevertheless, the curricular elements within each of these courses are valuable material for an inclusive knowledge base.

As mentioned earlier in this review, many of the individual skills that constitute a knowledge and skill base in music education have been studied separately. These issues range from conducing skills (Boardman, 2000; Dahlin, 1952; Romines, 2000; Runnels, 1992), rehearsal skills (Ellsworth, 1985; Menchaca, 1988; Pontious, 1982), error detection skills (Blocher, 1986; Doerksen, 1994; Forsythe & Woods, 1983; Woods, 1979), jazz education (Jones, 2005; Knox, 1996), score study (Hamilton, 1994), music

technology (Ohlenbusch, 2001), music theory and aural skills (Boyer, 1958; Schleff, 1989; Williams, 1984), applied performance skills (Brand & Burnsed, 1981; Petzold, 1951), classroom management (Snyder, 1996), band literature selection (Hayward, 2004), teaching beginners (Lethco, 1999), multicultural music education (Norman, 1994; Okun, 1998), and student teaching skills (Cannon, 2002; Coleman, 1999; Schmidt, 1994). Each of these studies, taken alone, only serves to reinforce the paradigm that supports training technicians instead of educating teachers. Each of these skills is rated as valuable; few in the music education profession would want teachers who lack these essential skills.

Music Education Textbooks as a Guide to Knowledge Base Components

There are several published texts designed for use in music-teacher education and for the development of novice teachers that establish knowledge base components. Many of these texts are backed by strong research components. Most cover administrative, musical, and personal skills and dispositions that help novice teachers in the classroom.

One of the most recent and comprehensive texts designed to assist in the preparation and development of the music teacher is that of Cooper (2004). This text covers administrative and instructional tasks including recruiting beginning students, planning for instruction, teaching specialized ensembles, scheduling, selecting performance repertoire, rehearsal management, motivation, discipline, student travel, working with students and parents, fundraising, budget practices and procedures, employment issues, professional ethics, and the development of a personal philosophy of music education. This textbook is designed for use by pre-service teachers and novice teachers, and thereby serves to influence the practice of instrumental music education. As

such, it provides detailed information that may be essential to the development of the knowledge base for teachers.

The Music Educators National Conference published a detailed collection of benchmarks that were described in terms of the psychomotor, cognitive, and affective skills that students should have upon completion of their elementary, middle-school, and high-school experiences in music (Music Educators National Conference, 1991). Skills for instrumental music were divided into "basic" and "advanced" levels and included specific goals on each wind and percussion instrument. Ensemble skills, historical knowledge, and creativity components were included in addition to technical skills. These benchmarks represent yet another source from which one can derive specific elements of the knowledge base.

The Music Educators National Conference published a guide designed to assist novice and experienced teachers and music booster organizations as they worked together (Music Educators National Conference, 1994). The special issues of forming and maintaining the social, philosophical, and technical aspects of the booster group and its relationship to the goals and structure of the music group is laid out with special emphasis on organization, budgeting, fundraising, travel support, and communications.

Another textbook designed for utilization in music teacher training was by Colwell and Goolsby (1992). This text covers evaluation and motivation of music students as well as administrative tasks such as personal organizational skills, scheduling, budgeting, purchasing, keeping track of equipment, relationships with parents and students, working with administrators and colleagues, recruiting, and class scheduling. Individual instrument knowledge on each wind, string, and percussion instrument is

included as well. A portion of the text is devoted to the planning aspects of the music teacher's job including score preparation, lesson planning and selecting music. Establishing daily routines, classroom procedures, warm-up activities, breathing exercises, technical skill building, and the use of chorales is covered as well. Specific ideas and issues related to the teaching of tone, balance, blend, tempo, meter, rhythm, and subdivision are mapped out. The special aspects of organizing, planning, and rehearsing the jazz band receive attention as well. All of these elements are valuable additions to the knowledge base.

Middleton, Garner, and Haines (1986) address administrative, leadership, and rehearsal techniques required of band conductors. Specific techniques appropriate for beginning, intermediate, and advanced classes as well as leading sectional rehearsals. Other technical skills addressed include the development of pitch awareness among ensemble members, intonation characteristics, and solutions to problems of various instruments, dealing with intonation problems in rehearsal, and rehearsal sequence and procedures. Specific techniques to assist in teaching accuracy, tone, precision, blend and balance, musicianship, and tempo are delineated. Topics of discipline and morale are also addressed.

While many of the texts focus on technical and administrative skills needed for success in the classroom, several are designed to assist directors in planning programs designed around the Comprehensive Musicianship model (Garofalo, 1983; Heisinger, 1973; O'Toole, 2003; Willoughby, 1971). Garofalo (1983) focuses on the students'

(1) understanding the structural elements of music including pitch, rhythm, timbre, form, and compositional techniques,

(2) knowledge of music as a creative art form of man in a historical context,

(3) skills including, aural skills, dexterous skills, and translative [music reading] skills (pp.3 – 4).

A key component in this approach is the development of student attitudes, habits, and appreciations. Organizational issues for directors such as selecting music appropriate for a Comprehensive Musicianship approach, conducting research on selected music, building lesson plans, writing instructional objectives, designing activities for Comprehensive Musicianship, and determining appropriate evaluation techniques are addressed.

O'Toole (2003) organizes these same Comprehensive Musicianship components into an arrangement resembling a five-point star consisting of analysis, outcomes, strategies, assessment, and music selection. Special emphasis is given to the technical skills needed by directors in areas such as determining the difficulty level for various pieces and describing the appropriateness of particular pieces for a comprehensive approach. O'Toole adds emphasis on teaching for different learning styles (visual, auditory, and kinesthetic) and includes journal writing as a key assessment component.

George, Hoffer, Lehman, and Taylor (1986) published a description of school music programs that included scheduling and staffing recommendations and a detailed description of what they believed students who exited programs should be able to do. This text discriminates between elementary, general music in the middle school and high school, as well as performance programs in band, orchestra, and choir. Skills, knowledge, and attitude benchmarks are articulated. An example of the goals for a student exiting an elective (performance) program in middle-school level music includes:

- indicate an increased awareness of the expressive qualities of the music they perform, including phrasing, dynamics, articulation, intonation, and balance

- study and perform wide variety of music from the standard concert repertoire

- experience on a very limited basis (grades 8 and 9 only) activities of concert performing groups that may include marching band, swing choir, jazz string ensemble, and such

- demonstrate a commitment to the ensemble in which they perform by practicing its music individually and participating in its rehearsals and concerts

- critique individual and group performances

- perform for an audience at least twice each year

- demonstrate improved skill and knowledge on their respective instrument through attention to posture, breath support, embouchure, bowing, fingerings, tone quality, and articulation

- perform 8 to 10 major and minor scales and arpeggios....(George, Hoffer, Lehman, & Taylor, 1986, p. 33)

Although written to assist administrators and others who may be called upon to

observe and offer evaluation to music teachers, a text by Doerksen (1990) lists a number

of items that may be considered part of a knowledge base. Administrative skills such as

planning, classroom and activity management, teaching, evaluation and other

professional and personal qualities are listed with a particular emphasis on the unique

variables with which music teachers must deal in each of these areas. Also included are

sample job descriptions for high school, middle school, and elementary teaching

positions which include skills and duties that are part of a knowledge base. Written in a

compact manner, each of these skills and duties is actually an amalgamation of several

complex skill and knowledge areas. As an example, the responsibilities of a high-school

band teacher include:

- Conducts rehearsals and performances demonstrating understanding of differences in style among various types of music.

- Presents performances of high musical quality in which groups are well-disciplined and make a good appearance.

- Uses music of high quality in a variety of types and styles.

- Builds and maintains a program that attracts and holds at least enough students to perform standard concert band literature with a characteristic ensemble sound and standard instrumentation.

- Collaborates with other district band instructors to ensure continuity in enrollment from elementary to middle to high school.

- Identifies, diagnoses, and prescribes remedial actions for problems in individual and group band instrument technique.

- Designs or selects and uses planned sequences of instruction for the development of band instrument technique and music reading.

- Selects and requisitions required music, instruments, equipment, and supplies.

- Ensures that instruments and equipment are properly used, maintained, and stored, and that inventory records are accurate and current.

- Participates cooperatively on school and districtwide [sic] activities (Doerksen, 1990, p. 15).

Without these valuable skills, secondary music teachers will fail to meet the

organizational and planning expectations and requirements of the job.

Another text written to assist those who might evaluate band and orchestra

programs was by Pizer (1990). The second half of this text contains checklists and rating

scales used to evaluate various components of instrumental music programs. Some of the

topics include evaluating methods books, judging quality music, defining the degree of

difficulty of band compositions, evaluating private lessons, evaluating class lessons,

evaluating stage band rehearsals, evaluating marching band, public relations strategies,

parent associations, rehearsal procedures, and ensemble techniques.

One of the few texts designed to assist the teacher of middle-school aged musicians is by Hinckley (1994). By focusing the presentation on problems particular to the prevailing philosophy of the nature of the middle-school student, an expanded list of components is exposed. Few texts point as strongly to the unique nature of the psychological, social, and physiological development of middle-school aged learners. Problems most often related to middle-school music teaching including teaming, block scheduling, advisory programs, and exploratory courses are covered. This text also includes sections on interdisciplinary instruction and the special nature of assessment in the middle school.

While each of these textbooks and evaluation aids serve to provide elements of a knowledge base for music teachers, most of these textbooks and studies neglect the interaction of these skills with each other and with the environment of the classroom and community. The reality of teaching is a more complex combination of these skills set in a framework that moves beyond technical mastery into the complex milieu of teaching (Bresler, 1993; Schulman, 1987). This complexity is represented in the Schulman (1986, 1987) model which is used to frame the design of this study and the discussion of survey results.

Summary

The historical basis for the development of a knowledge base in general teacher education was driven by social and historical factors related to the desire to remain secure domestically and competitive economically in an increasingly global society. The climate of standardization and accountability in the twentieth century resulted in the acceptance

of the notion of a knowledge base in education, and the work of Schulman (1986, 1987)

helps to organize the elements of that knowledge base in such a way that acknowledges

the complex nature of the many facets of teaching that lead to student success. Teachers'

accumulation of content knowledge in their subject areas is insufficient in itself to ensure

student understanding of material. National accreditation organizations, teacher

certification agencies, and teacher licensure procedures have begun to reflect this

expanded view of the craft of teaching, and elements from each of these organizations are

valuable components of a knowledge base for music teachers.

Components of a knowledge base for music-education professionals can also be

derived from the research investigating essential skills that successful teachers exemplify

in practitioner studies. Comparison studies of music education faculty with practitioners

provide a different perspective on this set of knowledge and skills. Textbooks written for

pre-service and practicing teachers serve as valuable resources for elements of the

knowledge base, and guidelines written by music-education professionals for

administrators who observe and evaluate music teachers add perspective and detail to this

knowledge.

The vital element of a manageable and realistic knowledge base for secondary

music education is a practical and useful framework upon which essential knowledge and

skills can be placed. By placing these items within a framework, the complexity of

teaching and the interrelatedness of the skills required for exemplary teaching is

acknowledged and valued. As a practical consideration for this study, the division of the

list of knowledge and skills into categories within the framework may help busy

practitioners evaluate and rank the elements within each category in a more meaningful

way. An accurate ranking of the knowledge and skills defined in the research literature, framed by the work of Schulman (1986, 1987), may provide a more definitive roadmap for those who endeavor to teach music educators in a way that reflects the complex nature of public-school teaching.

III. DESIGN OF THE STUDY

The compilation of a standard set of knowledge and skills for secondary instrumental music teachers, organized within the framework of Schulman (1986, 1987) to reflect the complex reality of public-school teaching, is the focus of the literature review. By placing these items within the Schulman framework, the complexity of teaching and the integral nature of the skills required for effective teaching are acknowledged and valued. The specific methods for validating the derived set of skills and knowledge, as well as the procedure for assessing practitioners' views of the relative importance of these elements follow.

The review of the literature justifies a knowledge base that includes knowledge, skills, and dispositions that teachers should possess in order to be successful and effective educators. The idea of a knowledge base for teachers in total can be applied to music teachers in general and to secondary instrumental teachers specifically. In developing a potential knowledge base, Valli and Tom (1988) list the following "adequacy criteria" for its evaluation:

> (a) it must include knowledge derived from all relevant scholarly traditions,
> (b) it must present competing views of teaching and schooling,
> (c) it must show relationships between technical and normative aspects of
>   teaching,
> (d) it must be useful and accessible to practitioners, and
> (e) it must encourage reflective practice. (p. 6)

Through a review of national accrediting organizations' guidelines, scholarly research into essential knowledge and skills necessary to music teacher success, and a review of music-education textbooks, a representative list of skills that are generally agreed upon to contribute to the success of secondary instrumental music teachers has been developed.

The framework developed by Schulman (1986, 1987) provides a structure into which this lengthy list of attributes and skills can be placed. Five of these areas, *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics*, and *Pedagogical Content Knowledge* are directly related to the in-class presentation of subject matter by secondary instrumental music teachers. The final Schulman category, *Knowledge of Educational Contexts*, is a vital component to the overall picture of teaching, but it serves to frame the combination of skills represented in the first five areas. A seventh area, *Administrative Knowledge*, was added to provide a category into which skills related to the management of financial, travel, inventory, and student information within the guidelines of campus, district, state, and federal requirements to support instruction were placed.

This chapter outlines the research questions related to the study and describes the development of the main survey instrument used to answer those questions. The selection criteria for potential participants in the pilot study and the main sample are presented next. A summary of the design of this study concludes the chapter.

Purpose of the Study

The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to professional success. The following research questions were developed:

1) Which knowledge and skills defined in research literature are thought to be most important to professional success by secondary instrumental music teachers?

2) How do variables related to respondents' teaching assignment and educational background interact with the individual rankings of knowledge and skills defined in the research literature?

Eight variables related to the individual respondents' teaching assignments and educational backgrounds were analyzed in conjunction with research question two:

(a) the subject area(s) taught,

(b) grade level(s) taught,

(c) the enrollment size of the instructor's school,

(d) the geographic location within the United States of the respondent's school,

(e) the number of full-time instrumental music teachers assigned to the respondent's primary campus,

(f) the amount of teaching experience in his or her primary subject area,

(g) the size of the undergraduate institution from which the teacher received his or her degree, and

(h) the amount of early field experience that was required in conjunction with their undergraduate degree programs.

Questionnaire Development

The literature review of national accrediting organizations' guidelines, scholarly research into essential knowledge and skills necessary to music teacher success, and a review of music-education textbooks, produced a representative list of skills that are generally agreed upon to contribute to the success of secondary instrumental music teachers. The list was analyzed and edited to remove items which were beyond the scope of the study, combine items which were similar, or split items which addressed more than

one essential category or skill set. Items on the list were then sorted into one of the categories drawn from Schulman's work (1986, 1987). These categories include *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics, Pedagogical Content Knowledge,* and *Knowledge of Educational Contexts.* A seventh category, *Administrative Knowledge* was added to categorize important items related to the management of financial, travel, inventory, and student information within the guidelines of campus, district, state, and federal requirements to support instruction.

The items in the list were reviewed and edited for clarity by the researcher and the co-chairs of the doctoral advisory committee. Each of the reviewers has extensive experience teaching secondary instrumental music in public schools. Through the review process, several items were again combined, moved to different categories, or removed because they were beyond the scope of the study.

Instrument-Verification Questionnaire

In order to establish reliability and validity of the remaining knowledge and skill items, an instrument-verification questionnaire was administered to a convenience sample of collegiate music faculty ($N = 20$) known to the researcher and faculty advisors. The selected faculty received an e-mail invitation (see Appendix A) that provided a Uniform Resource Locator (URL) link allowing them to enter a secure site hosted by an internet-based survey company (SurveyMonkey.com, 2006). Participants indicated consent to participate in the survey by clicking a "continue" button at the bottom of the welcome page (see Appendix B).

The instrument-verification questionnaire consisted of two parts (Appendix C). The first section of the questionnaire presented the individual knowledge and skill statements in random order. Respondents were asked to rate the relative importance of each skill on a Likert-type scale with "5" representing a "more important" skill and "1" representing a "less important" skill.

One of the purposes of the instrument-verification process was to eliminate some of the items from the final list of knowledge and skills in order to keep the primary data-collection instrument at a length that would not adversely impact the response rate. A combination of factor analysis, a review of Chronbach's alpha measure of internal consistency, and an evaluation of the faculty rankings of the Likert-type items was used to exclude individual questions from the battery of statements that would later be presented to public school teachers. The factor analysis produced a two-factor model based on the Likert-type ratings of each skill statement ($n = 88$). This model accounted for 53% of the total variance.

Nine items from the original list did not load into the first two components. Two of those items (Question 7 – *Classroom Management*, and Question 17 – *Modeling Characteristic Tone on Secondary Instruments*) were retained because of their high rankings by the faculty sample (7th and 22nd respectively out of 88 items) on the Likert-type scale. These two items, which were ranked seventh and twenty-second out of eighty-eight items, were retained in the final list of knowledge and skills, but were reworded in an effort to clarify their meanings.

Two more of the items that did not load into the factor model were restatements of items that were included elsewhere in the list and were removed from the final battery

of skill statements. Question 28 addressed the *Assessment of Aptitude for Instrument Selection*. This question was eliminated, and Question 13, which dealt with *Assessing the Physical and Social Characteristics to Assist in Selecting Instruments*, was retained.. Question 43 addressed the knowledge of *Specific Methods for Teaching Sight Reading*. It was eliminated from the question pool and replaced with Question 65 – *Specific Methods for Teaching Music Reading*.

Two other questions (Question 47 and Question 82) dealt with the concept of error detection. This skill was rated as the 11th highest rated skill overall by the music education faculty. In order to retain this skill in the final battery of statements, these two questions were combined into one statement and reworded for clarity.

The remaining three items that did not load into the factor model dealt with subject-specific skills including marching band (Questions 48 and 67) and jazz band (Question 63). Each of these three ranked in the bottom quintile of the faculty rankings. To remain consistent with respect to questionnaire design, other items that dealt with specific music subjects were removed including Question 40 – elementary methods, Question 42 – musical theatre, Question 10 – humanities classes, and Question 68 – choral methods.

Chronbach's alpha reliability analysis was performed on the all questionnaire items ($n = 65$) that dealt with Schulman's (1986, 1987) five pedagogical areas – *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics,* and *Pedagogical Content Knowledge*. Overall reliability was high (alpha = .97) and was not improved by removing any of the items.

Chronbach's alpha reliability analysis was also performed on each of the items within the five pedagogical areas separately. The *Content Knowledge* items (*n* = 20) achieved an alpha of .90. Removing individual items from the analysis did not improve reliability, but five of the items failed to correlate with other items within that category. These items were removed from the overall list of knowledge and skill statements. Question 56, which dealt with *Demonstrating Characteristic Tone on the Primary Instrument*, was retained because this item was ranked as the most important item by the music education faculty. The fact that this item was so highly ranked by almost every participant in the preliminary study may have been the reason that it did not load well. It would be difficult to justify the elimination of the item considered most important by these experts.

The items within the *General Pedagogical Knowledge* category (*n* = 6) achieved an alpha level of .88. No items would improve reliability if removed, and each item correlated well with the other items. The *Curriculum Knowledge* questionnaire items (*n* = 23) scored an alpha of .93. While none of the items would improve the alpha if removed, three were identified as having low inter-item correlations. These items (Question 11, Question 63, and Question 67) were removed. *Knowledge of Learners and Their Characteristics* items (*n* = 6) produced an alpha level of .71. Two items were removed because of their low correlation with the other items and their low rankings by music education faculty.

The greatest inconsistency in factor loadings was in the area of *Pedagogical Content Knowledge*. Of the total items in this category (*n* = 10), five loaded into one of the first five factors and were retained because of their high overall ratings by the music

education faculty; each was in the top third of the overall rankings. The alpha level of the items was within this category were also lower than for those in each of the other categories (alpha = .76). Two items (Question 5 and Question 53) improved the alpha when removed.

In the second segment of the instrument-verification questionnaire, respondents had the opportunity to provide comments or additional items that they felt should be included in the list of essential knowledge and skills. Participants also were given the opportunity to request copies of the final study.

Development of the Pilot and Main Data-Collection Instruments

After establishing thse construct validity and face validity of the individual knowledge and skill statements, a pilot-study questionnaire was constructed (see Appendix E). In the first portion of the questionnaire, participants were asked to provide information regarding their subject area(s) and grade level(s) taught, the enrollment size of their school, the general geographic location within the United States of the respondent's school, their primary performance instrument, the number of full-time instrumental music teachers assigned to their primary campus, the number of years of teaching experience in their subject area, the size of the undergraduate institution from which they received their degree, and the amount of early field experience that was compiled in conjunction with their undergraduate degree programs. This information was analyzed to show potential relationships between these variables and the individual rankings of items within each category and of the rankings of the categories themselves.

In the second segment of the questionnaire, participants were presented a list of skills in each of the five pedagogically-centered Schulman (1986, 1987) areas – *Content*

Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics, and *Pedagogical Content Knowledge.* In order to keep the length of the questionnaire such that the overall response rate would not be negatively impacted, individual items within the two areas of *Knowledge of Educational Contexts* and *Administrative Knowledge* were not presented in this study. Participants were asked to rank skills within each of the five selected categories from most important to least important. The statements within each category were presented in random order. Each collection of skills within each of the five categories was presented separately.

Based on the feedback from the initial instrument-verification procedure, two of categories that contained longer lists of items were split into smaller sub-categories. The *Content Knowledge* area was split into three sub-groups: *Non-performance, Performance,* and *Music Theory*. The *Curriculum Knowledge* category was divided into *Performance* and *Non-performance* groups. Limiting the number of items that respondents were asked to rank was consistent with current research into questionnaire design (Nardi, 2006).

In the final portion of the pilot-survey instrument, respondents were asked to rank the importance of each of the seven broad categories – *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Pedagogical Content Knowledge, Knowledge of Learners and Their Characteristics, Knowledge of Educational Contexts*, and *Administrative Knowledge* – using a paired comparison technique. The paired comparison technique has been used by researchers in the social sciences when lists of items that can only be ranked subjectively are analyzed (David, 1988; Nishisato, 2007). In the paired-comparison method, each individual item is presented in comparison with

every other item one at a time, and respondents are asked which of the two is more important.

An example of how the data may be manipulated in the paired-comparison technique follows (adapted from Nishisato, 2007, pp. 181-186). Table 3 shows three participants' comparisons of four of the areas presented earlier: *Content Knowledge* (C), *General Pedagogical Knowledge* (G), *Knowledge of Learners* (L), and *Administrative Knowledge* (A). The columns correspond to the pairs as they are compared (C, G), (C, L), (C, A), (G, L), (G, A), and (L, A). If the first item in the pair is preferred over the second item, a numeral "1" is placed into the table indicating that preference. If the second item in the pair is preferred, a numeral "2" is entered. For an example of the coding procedures, assume that participant 1 prefers *Content Knowledge* over *General Pedagogical Knowledge*. That preference is noted by placing the numeral 1 in that column in Table 3.

Table 3. Hypothetical paired-comparison data

Participant	CG	CL	CA	GL	GA	LA
1	1	2	2	2	2	2
2	2	1	1	2	1	2
3	1	2	2	1	2	2

In order to manipulate the preferences mathematically, pairs in which the second item are preferred over the first are changed to a "-1" value (see Table 4)

Table 4. Recoding of hypothetical paired-comparison data

Participant	CG	CL	CA	GL	GA	LA
1	1	-1	-1	-1	-1	-1
2	-1	1	1	-1	1	-1
3	1	-1	-1	1	-1	-1

In the next step, a dominance table is created by calculating the number of times a category is preferred minus the number of times the other categories were preferred over the first category (Nishisato, 2007). Table 5 represents the resultant dominance table based on the manipulation of hypothetical data from Table 4.

Table 5. Hypothetical dominance table of paired-comparison data

Category	Content Knowledge	General Pedagogical Knowledge	Knowledge of Learners	Administrative Knowledge	Sum
1	-1	-3	1	3	0
2	1	1	-1	-1	0
3	-1	-1	-1	3	0

By calculating the median dominance scores for the individual categories, a group preference can be derived. The median of all scores represents a scale of preference from positive (representing categories that were preferred more often than others) to negative (representing categories that were preferred less often than others).

The total number of comparisons is calculated using the formula $n(n-1)/2$ where n represents the total number of items to be compared (Nishisato, 2007). Since there are seven categories that are to be compared in the present study, there were 21 pairs of

statements for participants to compare. Aggregate data from the overall group shows the group preference for each category.

Summary of Questionnaire Development

A review of national accrediting organizations' guidelines, scholarly research into essential knowledge and skills deemed necessary to music teacher success, and a review of music-education textbooks, produced a representative list of skills that are generally agreed upon to contribute to the success of secondary instrumental music teachers. Items on the list were categorized into one of the five pedagogically-centered areas drawn from Schulman's work (1986, 1987). These items were reviewed and edited for clarity by the researcher and the co-chairs of the doctoral advisory committee. These items were submitted to a convenience sample of music education faculty ($N = 20$) from across the United States so that the category placement and item wording could be analyzed and edited. Statistical procedures were also used to help condense the number of questions used in the pilot and main questionnaire instruments.

Following modifications resulting from analysis of the responses provided by music-education faculty, a pilot-study questionnaire was developed to assess secondary instrumental music teachers' subjective opinions regarding the relative value of selected knowledge and skills divided into one of five pedagogically-centered areas. Participants were asked to use a paired-comparison technique to rank all seven main categories under consideration in this study. Demographic information from participants regarding subject area(s) and grade level(s) taught, school enrollment size, geographic location, primary performance instrument, number of full-time instrumental music teachers assigned to

respondents' primary campus, teaching experience, size of respondents' undergraduate

institutions, and the amount of early field experience was collected. Results from the pilot

study were used to modify the design of the main-study questionnaire to better fit the data

analysis procedures.

Population of the Pilot Study

Participants in the pilot study ($N = 60$) for this project were drawn from a

convenience sample of secondary instrumental music teachers from the central Texas

region. Names and e-mail addresses of 235 teachers were collected from publicly

available directory information from the Texas Music Educators Association (2007).

These teachers were invited by the research team to complete a pilot-study questionnaire

via e-mail. This e-mail invitation contained a Uniform Resource Locator (URL) link that

allowed them to enter a secure website hosted by an internet-based survey company

(SurveyMonkey.com, 2006). Survey results from the pilot study were delivered via

secure e-mail to the researcher and analyzed using Microsoft Excel 2003 and SPSS 13.0.

Results from the pilot study were used to modify the design of the main-study

questionnaire to better fit the data analysis procedures utilized in the primary study.

Population and Sample of the Primary Study

Potential respondents for the main study were drawn from a random sample of

secondary instrumental music teachers from across the United States. In January of 2007,

a database of public secondary schools in the United States was compiled using publicly-

available directory information retrieved from individual state departments of education

and from the National Center for Education Statistics (2004). The data were then filtered to include only schools that fit the limitations of the study ($N = 32,777$).

In order to determine an appropriate sample size, an estimate of the total number of secondary instrumental music teachers was required. No direct data related to this number exists, but the National Center for Education Statistics (2002) estimated that there were 34,017 secondary music teachers in the United States. No information is available about the breakdown of these teachers into instrumental and vocal categories. In order to estimate that figure, membership data from the Music Educators National Conference (MENC) and the Texas Music Educators Association (TMEA) were consulted. These two organizations were selected because of the makeup of the instrumental portion of their memberships. Membership in the secondary instrumental category of MENC tends to be lower than for those in statewide organizations of secondary instrumental teachers. The TMEA secondary instrumental membership tends to be higher than most statewide organizations. By using an average of the MENC and TMEA memberships, a conservative estimate can be made of the overall number of secondary instrumental music teachers was calculated.

The membership data from MENC (see Table 6) indicate that approximately 56.5% of the 2004 membership classified themselves as secondary instrumental music teachers (Music Educators National Conference, 2004). Membership data from TMEA (see Table 7) show that 71.6% of the 2006-07 membership classified themselves as secondary instrumental music teachers (S. Daugherty, personal communication, January 31, 2007). The percentage of instrumental music teachers in MENC and the percentage of instrumental music teachers in TMEA was averaged [(56.5% * 71.6%)/2] to estimate that

64.1% of secondary music teachers nationwide could be identified as instrumental instructors. Using the estimate of secondary teachers provided by NCES (34,017 teachers) and the average of MENC and TMEA membership data (64.1%), it was estimated that there are 21,805 instrumental music teachers in the United States.

Table 6. MENC elementary and secondary members by division - 2004

Membership division*	Number of members*	% of total members
Choral	26,365	43.5%
Band	25,097	41.4%
Orchestral	9,186	15.1%
(Instrumental)	(34,283)	(56.5%)
Total	60,648*	

* Membership categories may overlap as individuals may list themselves in multiple divisions and grade levels.

Table 7. TMEA secondary members by division – 2006-07

Membership division	Middle school / junior high	High school	Total	% of total members
Choral	795	869	1664	28.4%
Band	1,676	1,809	3,485	59.5%
Orchestral	409	295	704	12.0%
(Instrumental)	(2085)	(2104)	(4189)	(71.6%)
Total	2,880	2,973	5,853	

A power level calculation was made using a confidence level of 95% with a confidence interval of 5 to derive an optimal $N = 378$ participants (Creative Research Systems, 2003). It was determined that a random sample pool of $N = 1,000$ would provide an adequate return rate for a statistically meaningful result.

In order to achieve a representative sample from all regions and all grade levels, the database of US secondary schools compiled by the researcher was sorted by grade level (high schools followed by middle schools) and then by postal service ZIP code. A table of random numbers (Rand Corporation, 2001) was consulted to find a starting point, and then every 55th school was highlighted for possible inclusion in the study.

Potential participants were invited to join the study through e-mail and postal invitations. Follow-up postcards and e-mail reminders were sent to each potential participant. In an effort to improve response rates, a personalized invitation to participate was generated. An attempt was made to find the names and e-mail addresses of the band and/or orchestra directors from each of the schools that were randomly selected for possible inclusion. Names and e-mail addresses for potential respondents were gathered

by locating the public web site for each randomly selected school. If a website could not be found, or if a school did not list a band or orchestra director, the next school on the master list was selected for possible inclusion in the study, and the selection process was repeated. If separate band and orchestra teachers were listed, both were added to the contact list. If more than one teacher was listed for band, only one was randomly selected to receive an invitation to participate. This random selection from among multiple directors was implemented in order to help avoid a possible bias based on experience level or employment position.

A discernable lack of data from schools in several geographic areas, most notably in some of the largest urban school districts such as those in the New York City and Detroit Public Schools, presented a potential weakness in the research design. Some of the larger urban school districts represented a sizeable segment of the randomly-selected schools, but their websites did not list any personal contact information for music teachers. Music administrators from these school districts were contacted in order to solicit the names and email addresses of the instrumental music teachers in these districts, but those requests were denied citing school districts' privacy guidelines.

Other gaps were noted in some of the rural school districts in the south and central-plains regions of the United States. In an effort to reach potential respondents in these areas, postal invitations were sent to 50 schools in the areas in which e-mail information could not be readily obtained. There is no evidence that suggests that these postal invitations contributed to the response rate of the overall study.

When the selection process was complete, the post card and e-mail invitations to participate in the study were sent to the selected teachers. Following a reasonable amount

of time for postal delivery, e-mail and postal reminder notifications were sent to each participant. The e-mail and the post-card invitations as well as the follow-up reminders each contained a Uniform Resource Locator (URL) link that allowed potential participants to enter a secure internet web site hosted by an internet-based survey company (SurveyMonkey.com, 2006). Information submitted as a part of the survey process that might compromise the personal privacy of individual respondents, such as Internet Protocol (IP) addresses of respondents, was removed from the responses. After the study was complete, the names and e-mail addresses of the random sample were removed from the data set. To further protect the privacy rights of the survey respondents, data collected and stored in the secure servers at Survey Monkey were delivered to the researcher via secure e-mail. These data were analyzed using Microsoft Excel 2003 and SPSS 13.

Summary

The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to professional success. The following research questions were developed:

1) Which knowledge and skills defined in research literature are thought to be most important to professional success by secondary instrumental music teachers?

2) How do variables related to respondents' teaching assignment and educational background interact with the individual rankings of knowledge and skills defined in the research literature?

Representative statements regarding the essential knowledge and skills that contribute to the success of secondary school teachers were compiled from a review of the literature. This list was further reviewed, edited, and validated using a questionnaire sent to music education faculty ($N = 20$) across the United States. After this review, a questionnaire was developed to gather subjective opinions related to the perceived importance of the essential knowledge and skills complied from the literature. The survey instrument was also designed to allow participants to rate the relative importance of the overall categories related to these skills and to collect demographic information related to the respondents' background and teaching assignments.

A pilot study utilizing a convenience sample of secondary instrumental instructors from central Texas ($N = 60$) helped establish validity and reliability of the main survey instrument. The main study examined the opinions of a randomly selected sample of secondary instrumental music teachers from across the United States ($N = 214$). A description of the analysis procedures that were used to answer the two research questions is detailed in chapter IV.

IV. DATA ANALYSIS

This chapter presents the statistical procedures used to answer the research questions. The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to professional success. The following research questions were developed:

1) Which knowledge and skills defined in research literature are thought to be most important to professional success by secondary instrumental music teachers?

2) How do variables related to respondents' teaching assignment and educational background interact with the individual rankings of knowledge and skills defined in the research literature?

In order to investigate these research questions, an anonymous, online questionnaire was administered to a random sample of secondary instrumental music teachers from across the United States ($N = 214$). This survey assessed practitioners' views on the relative importance of individual knowledge and skill items within areas defined by the researcher and by Schulman (1986, 1987). The respondents were also asked to rank the categories in relationship to each other based on the category's importance to their daily work. The face validity of the questionnaire items, as well as the construct validity of the placement of various items within separate categories was established through an analysis of a convenience sample of music education faculty members ($N = 20$) from across the United States.

Response Rate and Respondent Demographics

E-mail invitations were sent to 924 addresses compiled from publicly available websites of individual schools drawn from the national database of schools complied by the researcher. Of these e-mail invitations, 74 (8%) were returned for a variety of reasons. Some e-mails were blocked by bulk-mail filters while others were returned with indications that the addresses were no longer valid. The successful delivery of e-mail messages cannot be assumed even when these messages are not returned because of the wide variety of bulk-mail filtering systems used by school districts. The volume of unsolicited bulk e-mail that is delivered in the United States, estimated at between 40 and 50 percent of all mail received by individuals (Symantec Corporation, 2007), is another factor that must be considered when determining whether a successfully sent email might be opened and read by potential participants.

Postal invitations and reminders to participate were sent to each of the directors who received e-mail invitations. Fifteen of these postcards were returned with insufficient addresses. Fifty post cards were sent to school addresses in which no director information could be found. These invitations were drawn from the areas identified earlier in this study in which sizeable geographic gaps in website information existed.

A total of 214 directors responded to the 850 valid email invitations to participate for a response rate of 25.2%. Tables 8 through 15 summarize the demographic nature of the respondents.

Table 8. Teaching assignment of survey respondents

	n	Percent	Valid percent	Cumulative percent
Band only	91	42.5	42.5	42.5
Orchestra only	16	7.5	7.5	50.0
Band and orchestra	7	3.3	3.3	53.3
B/O and choir	15	7.0	7.0	60.3
B/O and other music	67	31.3	31.3	91.6
B/O and other non-music	18	8.4	8.4	100.0
Total	214	100.0	100.0	

Table 9. Grade level assignment of survey participants

	n	Percent	Valid percent	Cumulative percent
Middle school/ junior high	79	36.9	36.9	36.9
High school	58	27.1	27.1	64.0
All-level	77	36.0	36.0	100.0
Total	214	100.0	100.0	

Table 10. School enrollments of survey respondents

		n	Percent	Valid percent	Cumulative percent
Valid	Fewer than 500 students	50	23.4	23.8	23.8
	501-1000 students	80	37.4	38.1	61.9
	1001-1500 students	47	22.0	22.4	84.3
	More than 1500 students	33	15.4	15.7	100.0
	Total	210	98.1	100.0	
No Answer		4	1.9		
Total		214	100.0		

Table 11. Staff size of survey participants

		n	Percent	Valid percent	Cumulative percent
Valid	1	115	53.7	55.3	55.3
	2	61	28.5	29.3	84.6
	3 or more	32	15.0	15.4	100.0
	Total	208	97.2	100.0	
No Answer		6	2.8		
Total		214	100.0		

Table 12. Teaching experience of survey respondents

		n	Percent	Valid percent	Cumulative percent
Valid	0-5 years	41	19.2	19.5	19.5
	6-10 years	48	22.4	22.9	42.4
	11-20 years	48	22.4	22.9	65.2
	21-30 years	52	24.3	24.8	90.0
	More than 30 years	21	9.8	10.0	100.0
	Total	210	98.1	100.0	
No Answer		4	1.9		
Total		214	100.0		

Table 13. Early field experience length of survey participants

		n	Percent	Valid percent	Cumulative percent
Valid	10 hours or fewer	44	20.6	21.4	21.4
	11-20 hours	30	14.0	14.6	35.9
	21-30 hours	28	13.1	13.6	49.5
	31-40 hours	24	11.2	11.7	61.2
	More than 40 hours	47	22.0	22.8	84.0
	Don't know/can't remember	33	15.4	16.0	100.0
	Total	206	96.3	100.0	
No Answer		8	3.7		
Total		214	100.0		

Table 14. Regional breakdown of survey participants

		n	Percent	Valid percent	Cumulative percent
Valid	Eastern	15	7.0	7.6	7.6
	North Central	48	22.4	24.2	31.8
	Northwest	17	7.9	8.6	40.4
	Southern	41	19.2	20.7	61.1
	Southwestern	53	24.8	26.8	87.9
	Western	24	11.2	12.1	100.0
	Total	198	92.5	100.0	
No Answer		16	7.5		
Total		214	100.0		

Table 15. Participants' undergraduate college enrollment size[2]

		n	Percent	Valid Percent	Cumulative Percent
Valid	Under 7,000	74	34.6	36.8	36.8
	7,000-15,000	46	21.5	22.9	59.7
	15,000-25,000	20	9.3	10.0	69.7
	Over 25,000	61	28.5	30.3	100.0
	Total	201	93.9	100.0	
No Answer		13	6.1		
Total		214	100.0		

An analysis of the demographic traits of the directors who responded to the survey shows the typical makeup of the responding group. Respondents in this study were mostly band directors (43%), many of whom taught at least one other music class (31%). Of these directors, 36% taught both middle-school and high school students. The reminder of the respondents specialized in either high school (27%) or middle school (37%). More than half (62%)of the respondents taught in schools with enrollments of fewer than 1000 students, and the majority (55%) taught at schools in which they were the only instrumental music teacher on campus.

The response rate from teachers with various levels of teaching experience was fairly well distributed across each demographic group with the exception of two groups. Novice teachers, those with between 0 and 5 years of experience only accounted for 19%

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[2] College enrollment data retrieved from the National Center for Education Statistics (2007).

of the responses. This response rate is not unexpected, as many new teachers lack the time to respond to a survey of this type as they deal with their day-to-day activities. Fewer teachers with more than 30 years of experience (10%) responded. Since many teachers are eligible for retirement at this stage in their careers, this result was also not unexpected.

Regional response rate was lower than expected from directors in the Eastern (8%), Northwest (9%), and Western (12%) areas of the country. These areas include several large school districts from which data regarding personal email addresses and director names could not be located. The absence of a personalized invitation may have negatively impacted the response rate from these regions.

The responses to questions related to directors' undergraduate programs were fairly evenly distributed across the possible categories. Only 15% of the respondents did not know or could not remember the length of their early field experience. Directors reported either fewer than 10 hours (21%) or more than 40 hours (22%) most often. Respondents were most often from undergraduate institutions with enrollments of fewer than 7,000 students (37%), and the fewest number of responses came from students from schools of between 15,000 and 20,000 students (10%).

A description of the analysis procedures to be used to answer the research questions in this study follows.

Research Question One

The first research question was designed to determine which knowledge and skills defined in research literature were thought to be most important to professional success by secondary instrumental music teachers. The overall consensus of the sample was calculated using the rankings of individual items within the five pedagogical areas of Schulman's (1986, 1987) framework: *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics,* and *Pedagogical Content Knowledge*. In addition, the rankings of all seven Schulman areas were compared. Specific analysis techniques and the results of those analyses follow.

Rankings of the Seven Schulman Areas

Analyzing the paired-comparison segment of the questionnaire produced the rank of the categories in relationship to each other. The paired-comparison technique results in a rank-order score derived by calculating the number of times an item is favored to another item minus the total number of times another item is preferred over the original item (David, 1988; Nishisato, 2007). To achieve the ranking of the categories among all respondents, the median scores and the standard error are calculated for each category. Categories with a larger median score may be considered more important, and items with a smaller standard error indicate a higher level of precision or agreement among respondents.

Table 16. Rank order of the seven Schulman categories

	Grouped median	Standard error of mean	Range
Pedagogical Content Knowledge	3.78	.17	10
Content Knowledge	2.94	.18	10
General Pedagogical Knowledge	1.93	.20	10
Curriculum Knowledge	-0.47	.22	12
Knowledge of Learners	-0.75	.22	12
Knowledge of Educational Contexts	-3.35	.18	12
Administrative Knowledge	-4.73	.17	12

The grouped median was derived from the power table produced during the analysis of the paired-comparison rankings. The median scores fall onto a scale upon which each of the broad categories is scored. Categories with higher scores indicate a greater preference for that category when compared to each of the other categories. Categories with lower scores indicate a preference for other categories over them. The lower ranked categories were not rated "unimportant" by survey participants, but merely chosen less often than the other categories. Figure 3 is a representation of the preference of the overall group plotted horizontally to show the strength and relationship of the preferences.

The standard error or mean indicates the degree of agreement among the respondents. Lower numbers indicate greater agreement. The most-preferred categories, *Pedagogical Content Knowledge* and *Content Knowledge*, had lower standard error scores and indicate a greater agreement among respondents. The least-preferred

categories, *Knowledge of Educational Contexts* and *Administrative Knowledge*, also have

relatively low standard error scores that also indicate a greater agreement among

respondents.

Figure 3. Relationship of the overall rankings of the seven Schulman categories
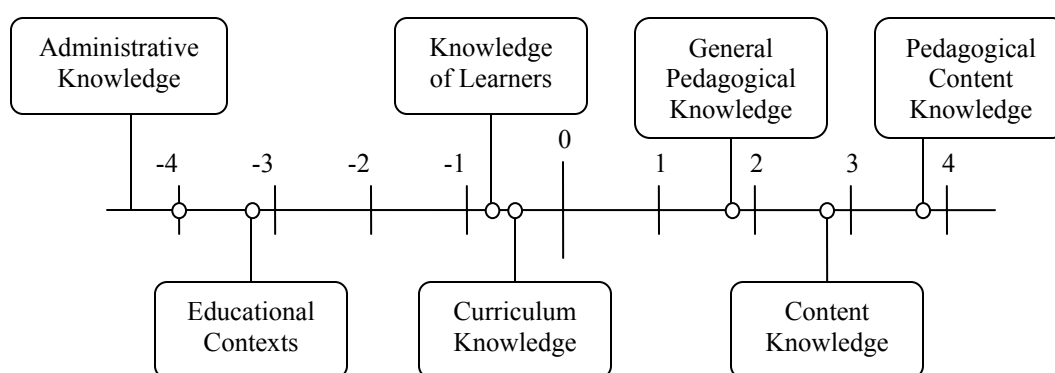
In order to examine which knowledge and skills are thought to be most important

to professional success in music teaching, survey respondents submitted a rank-order

score for each item within five categories – *Content Knowledge, General Pedagogical*

Knowledge, Curriculum Knowledge, Knowledge of Learners and Their Characteristics,

and *Pedagogical Content Knowledge*. These data were analyzed in Microsoft Excel 2003

and SPSS 13. The median score of the rankings of items within individual categories

indicates the overall importance of each item for the group. The standard error of the

mean indicates the level of agreement among the respondents. Items with smaller

standard error represent statements that have a higher level of agreement among the participants. The overall rankings for the items in each category are presented below.

Content Knowledge

Based on the feedback from the music-education faculty review of the list of essential knowledge and skills, *Content Knowledge* was split into three sub-areas that included *Non-performance, Performance,* and *Music Theory* items. The number of items to be ranked was thereby reduced to a quantity that was more manageable for survey participants. The first three tables below represent the overall rankings from the *Content Knowledge* area. Participants ranked these items on an ordinal scale with "1" representing the most important item. The median of the valid responses indicates the overall preference of the group; smaller numbers indicate a higher overall rank. The standard error of mean is a measure of central tendency indicating the general agreement among the participants; smaller standard error numbers represent a stronger group consensus.

Table 17. Rank order of *Content Knowledge – Non-performance* items

	Grouped median	Standard error of mean	Range
Know the fundamental characteristics of instruments they teach (common fingerings, ranges, pitch tendencies, sound production, posture, grip, care, maintenance, minor repair, and high-quality brands/models of equipment and supplies)	1.22	.05	5
Understand basic physical requirements that promote success on individual instruments	2.27	.09	5
Possess broad knowledge of Western art music including recognizing major periods in music, performance practice, composers, conductors, and styles	3.62	.09	5
Integrate instruction in music with other arts and with subjects outside the arts	3.94	.09	5
Know federal and state laws that impact instruction (exceptional learners, student privacy, employment, etc.)	4.82	.10	5
Possess knowledge of world and ethnic music	5.06	.07	6

Table 18. Rank order of *Content Knowledge – Performance* items

	Grouped median	Standard error of mean	Range
Conduct well enough to lead an ensemble in effective rehearsals and performances	1.75	.09	4
Demonstrate characteristic tone and technique on primary instrument	2.29	.08	4
Demonstrate strong sight-reading ability	3.01	.08	4
Model characteristic tone production on secondary instrument(s)	3.35	.09	4
Possess piano performance skills adequate to analyze works and accompany music for current teaching level	4.61	.07	4

Table 19. Rank order of *Content Knowledge – Music Theory* items

	Grouped median	Standard error of mean	Range
Detect technical errors in ensemble performances	1.64	.06	3
Possess fundamental aural skills (identification of intervals, chords, and rhythms; the ability to play simple melodies by ear).	2.17	.08	4
Analyze the elements of compositional organization in a piece (pitch, scale types, harmony, rhythm, texture, form, timbre, etc.)	2.92	.08	4
Arrange, re-write, or simplify a piece of music	3.52	.08	4
Be familiar with professional journals, organizations, texts, and reference materials	4.82	.05	3

General Pedagogical Knowledge

Table 20 shows the overall rankings of items in the *General Pedagogical Knowledge* area. Participants ranked these items on an ordinal scale with "1" representing the most important item. The median scores clustered into two distinct regions in this category with the top three items clustering near the top, and the three lowest-ranked items near the bottom.

Table 20. Rank order of *General Pedagogical Knowledge* items

	Grouped median	Standard error of mean	Range
Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.	2.29	.10	5
Manage classroom behavior	2.36	.10	5
Effectively communicate with students through appropriate use of voice, body, face, and space	2.53	.11	5
Understand how most people learn most efficiently	4.37	.11	5
Possess a professional level of written and oral communication skills (grammar, punctuation, spelling, etc.)	4.65	.12	5
Demonstrate an ability and willingness to assess classroom procedures	4.83	.08	4

Curriculum Knowledge

Based on the feedback from the music-education faculty review of the list of essential knowledge and skills, *Curriculum Knowledge* was split into two sub-areas that included *Performance* and *Non-performance* items. This division allowed participants to rank fewer items in each category. The overall results in these areas are summarized in the following tables. As before, participants ranked these items on an ordinal scale with "1" representing the most important item.

Table 21. Rank order of *Curriculum Knowledge – Non-Performance* items

	Grouped median	Standard error of mean	Range
Be familiar with specific techniques for teaching beginning-level classes	1.60	.10	4
Identify musical concepts that could be taught within a musical work	2.35	.08	4
Be familiar with a core repertoire of method books and materials for band and/or orchestra	3.14	.09	4
Be familiar with a core repertoire of solo, small ensemble (chamber), and large ensemble (full band and/or orchestra) works	3.50	.09	4
Know how to use technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)	4.39	.09	4

Table 22. Rank order of *Curriculum Knowledge – Performance* items

	Grouped Median	Standard Error of Mean	Range
Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure	1.62	.12	7
Know specific ways of teaching steady pulse and accurate rhythm	2.79	.12	7
Know specific methods to teach students to read and write musical notation	4.35	.15	7
Know specific ways of teaching technical facility	4.49	.13	7
Know specific warm up routines and exercises	4.57	.15	7
Know specific ways to teach musical phrasing	5.10	.12	7
Develop yearly plans to ensure development of individual and ensemble skills	5.67	.17	7
Know specific ways to teach students to improvise	7.57	.09	6

The *Curriculum Knowledge – Performance* items show a higher standard error indicating less agreement among survey respondents. The top two items in this category also clustered near the top of the results.

Knowledge of Learners and Their Characteristics

Table 23 shows the overall rankings of the items within the *Knowledge of Learners and Their Characteristics* area. The middle three items clustered closely and are separated from the top and bottom choices.

Table 23. Rank order of *Knowledge of Learners and Their Characteristics* items

	Grouped median	Standard error of mean	Range
Establish and maintain student motivation	1.59	.08	4
Recognize and adapt presentation of material to assist students with various learning styles (visual, auditory, kinesthetic)	3.00	.09	4
Be aware of the social and physical characteristics specific to middle-school and/or high-school students	3.26	.09	4
Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments	3.26	.10	4
Demonstrate knowledge of the particular needs of specific student populations (exceptional learners, English-language learners, advanced students, students who need more help, etc.)	4.00	.08	4

Pedagogical Content Knowledge

Table 24 shows the rank order of the items in the *Pedagogical Content Knowledge* area. More subtle analysis related to the comparison of the demographic variables is reserved for the examination of research question two.

Table 24. Rank order of *Pedagogical Content Knowledge* items

	Grouped median	Standard error of mean	Range
Monitor students' progress and change instruction to meet individual and group needs	2.38	.11	6
Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding	2.93	.12	6
Prescribe solutions for common performance problems (using too much pressure, rushing, etc.)	3.19	.12	6
Assess the effectiveness of one's own rehearsal methods	3.29	.13	6
Analyze a score to determine the difficulty level, possible problems spots and technical challenges	4.37	.12	6
Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction	5.82	.11	6
Develop valid, reliable, and useful auditions and tests	6.30	.10	6

Research Question Two

The second research question investigates how variables related to respondents'

teaching assignment and educational background interact with the rankings of the

individual areas of knowledge and skills defined in the research literature. The analysis

techniques associated with this question are related to the interaction of the following

independent variables:

(a) subject area,

(b) grade level,

(c) school enrollment,

(d) geographic location,

(e) number of full-time instrumental music teachers,

(f) teaching experience,

(g) size of respondents' undergraduate institutions, and

(h) the amount of early field experience.

Each independent variable is categorical and is measured at the nominal level. The

dependent variables include:

(i) the participants' rank order of the items within each category and

(j) the participants' rank order of the categories themselves.

These data are measured at the ordinal level.

In order to compare the nominal-level, independent variables (a) – (h) with the

ordinal dependent variables (i) and (j), a chi-square test of independence was calculated

comparing the independent variables with the dependent variables using SPSS 13. A

significant interaction indicates that membership in various demographic groups [the

nominal-level independent variables (a) – (h)] correlates with differences in rankings of the individual knowledge and skills listed within each category and with the overall rankings of the categories themselves.

Content Knowledge

A chi-square test of independence was calculated comparing the rank order of each item with the independent variables listed above. Only the statistically significant interactions are reported below.

A significant interaction was found between the rankings of the *Content Knowledge-Non-performance* item dealing with *Legal Knowledge* ($\chi^2(20) = 38.31$, *p* < .01). Directors with between 6 and 10 years of teaching experience ranked *Legal Knowledge* slightly lower than the overall group, but this category was ranked near the bottom of the list for all sub-groups. Table 25 shows the overall rankings of these items grouped by teaching experience.

Table 25. Differences in rank order of *Content Knowledge – Non-performance* based on number of years' teaching experience

	Overall rank	0-5 years	6-10 years	11-20 years	21-30 years	More than 30 years
Know the fundamental characteristics of instruments they teach	1	1	1	1	1	1
Understand basic physical requirements that promote success on individual instruments	2	2	2	2	2	2
Possess broad knowledge of Western art music	3	3	3	3	3	3
Integrate instruction in music with other arts and with subjects outside the arts	4	4	4	4	4	4
Know federal and state laws that impact instruction**	5	5	6	5	5	5
Possess knowledge of world and ethnic music	6	6	5	6	6	6

** - significant at the $p < .01$ level

Figure 4 shows the number of times each rank (in this case, 1 through 7) was assigned to the *Legal Knowledge* item when grouped by number of years of teaching experience. Teachers with between six and ten years of teaching experience rated *Legal*

Knowledge slightly higher more often than did the entire sample and every other sub-

group.

Figure 4. Rankings for *Legal Knowledge* sorted by number of years' of teaching

experience
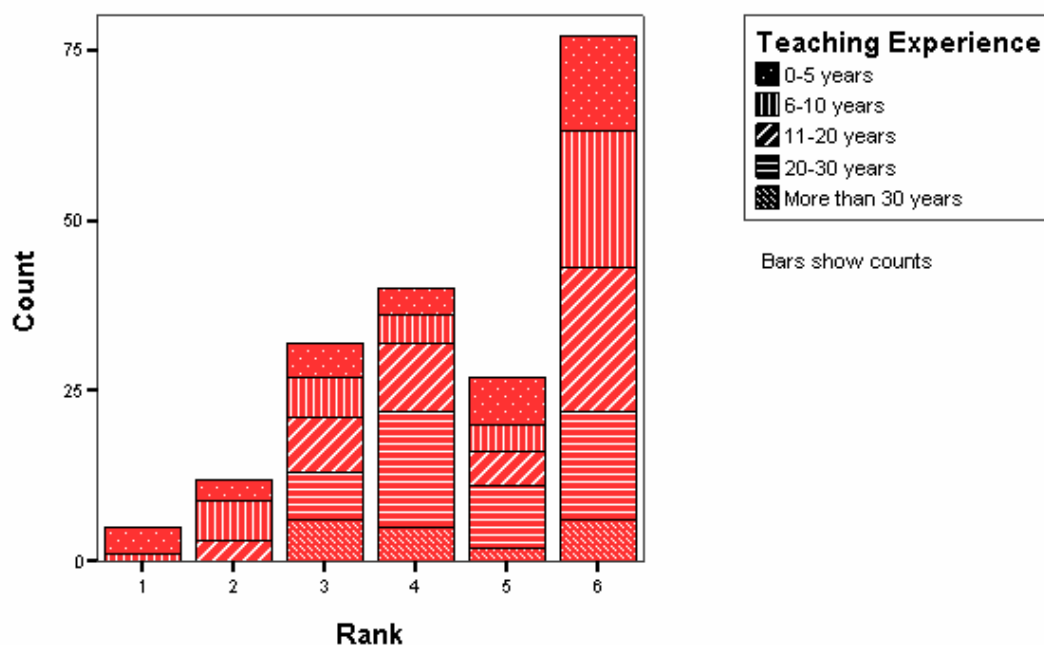
The *Content Knowledge – Non-performance* item *Knowledge of World-Ethnic*

Music interacted significantly with the respondents' region of the United States ($\chi^2(25) =$

39.84, *p* < .05). Directors in the Eastern, North Central, and Northwest regions of the

United States ranked *Knowledge of World-Ethnic Music* slightly higher than the other

sub-groups, but still ranked this item near the bottom of the list.

Table 26. Differences in rank order *of Content Knowledge – Non-performance* based on regions of the United States

	Overall Rank	Eastern	North Central	Northwest	Southern	Southwestern	Western
Know the fundamental characteristics of instruments they teach	1	1	1	1	1	1	1
Understand basic physical requirements that promote success on individual instruments	2	2	2	2	2	2	2
Possess broad knowledge of Western art music	3	3	3	3	3	3	3
Integrate instruction in music with other arts and with subjects outside the arts	4	4	4	4	4	4	4
Know federal and state laws that impact instruction	5	6	6	6	5	5	5
Possess knowledge of world and ethnic music*	6	5	5	5	6	6	6

* - significant at the *p* < .05 level

Figure 5 shows the number of times each rank was assigned for *Knowledge of World-Ethic Music* item grouped by region of the United States.

Figure 5. Rankings for *Knowledge of World-Ethnic Music* grouped by region of the United States
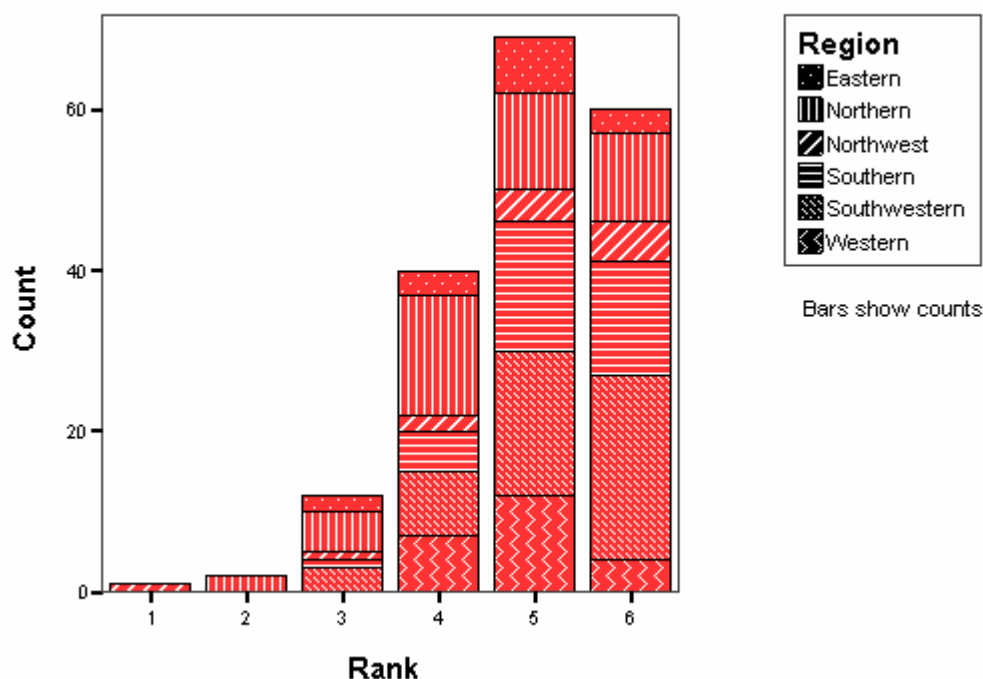
A significant interaction was found between the rankings of the *Content Knowledge – Performance* item *Demonstrate Characteristic Tone and Technique on Primary Instrument* and the participants' teaching assignments ($\chi^2(20) = 32.23$, $p < .05$). Directors who taught choir or other music classes in addition to band and/or orchestra rated *Demonstrate Characteristic Tone and Technique on Primary Instrument* lower than the other sub-groups, but this item still was ranked near the top of the list.

Table 27. Differences in rank order of *Content Knowledge – Performance* based on teaching assignment

	Overall rank	Band only	Orchestra only	Band and orchestra	B/O and choir	B/O and other music	B/O and other non-music
Conduct well enough to lead an ensemble in effective rehearsals and performances	1	1	1	1	1	1	1
Demonstrate characteristic tone and technique on primary instrument*	2	2	2	2	2	3	2
Demonstrate strong sight-reading ability	3	3	3	4	3	2	4
Model characteristic tone production on secondary instrument(s)	4	4	4	3	4	4	3
Possess piano performance skills adequate to analyze works and accompany music for current teaching level	5	5	5	5	5	5	5

* - significant at the *p* < .05 level

Significant interaction was found when comparing rankings of *Model*

Characteristic Tone Production on Secondary Instrument(s) with the size of

instructional staff ($\chi^2(8) = 19.85$, *p* < .05). Directors who taught in schools where they

had at least two other full-time directors on staff ranked this skill slightly lower and

ranked *Demonstrate Tone and Technique on Primary Instruments* slightly higher.

Table 28. Differences in rank order of *Content Knowledge – Performance* grouped by size of teaching staff.

	Overall Rank	1	2	3 or more
Conduct well enough to lead an ensemble in effective rehearsals and performances	1	1	1	2
Demonstrate characteristic tone and technique on primary instrument	2	2	2	1
Demonstrate strong sight-reading ability	3	3	3	4
Model characteristic tone production on secondary instrument(s)*	4	4	4	3
Possess piano performance skills adequate to analyze works and accompany music for current teaching level	5	5	5	5

* - significant at the *p* < .05 level

The rankings given by directors who taught in schools in which they were the

only full-time music instructor were distributed fairly evenly across all five possible

rankings (see Figure 6).

Figure 6. Rankings of *Modeling on Secondary Instruments* grouped by size of teaching staff
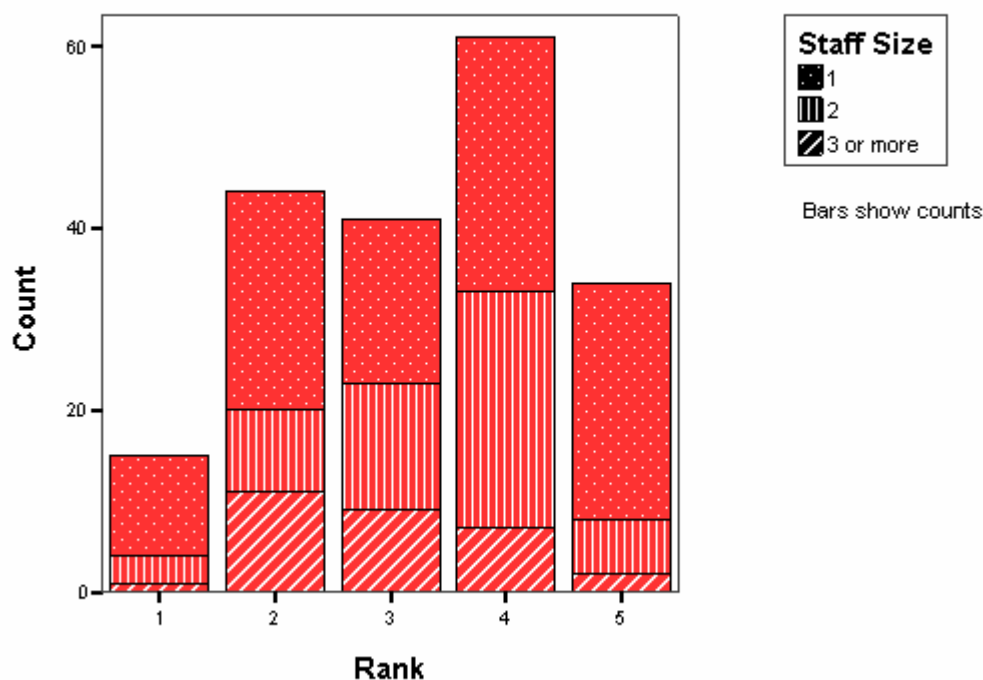
The rankings of *Demonstrate Characteristic Tone and Technique on Primary Instruments* interacted significantly with the region of the United States ($\chi^2(20) =$ 40.54, $p < .01$). Directors in the Southwestern region ranked this skill slightly higher than the overall group and all other sub-groups supplanting *Conducting* as the top-rated item by the overall group. Directors in the Northwest rated *Demonstrate Characteristic Tone and Technique on Primary Instruments* lower overall placing *Sight Reading Skills* higher than the overall group.

Table 29. Differences in rankings of *Content Knowledge – Performance* grouped by region of the United States

	Overall Rank	Eastern	North Central	Northwest	Southern	Southwestern	Western
Conduct well enough to lead an ensemble in effective rehearsals and performances	1	1	1	1	1	2	1
Demonstrate characteristic tone and technique on primary instrument**	2	2	2	3	2	1	2
Demonstrate strong sight-reading ability	3	3	4	2	3	3	3
Model characteristic tone production on secondary instrument(s)	4	4	3	4	4	4	4
Possess piano performance skills adequate to analyze works and accompany music for current teaching level	5	5	5	5	5	5	5

** - significant at the *p* < .01 level

Figure 7. Rankings of *Demonstrate Characteristic Tone and Technique on Primary Instrument* grouped by region of the United States
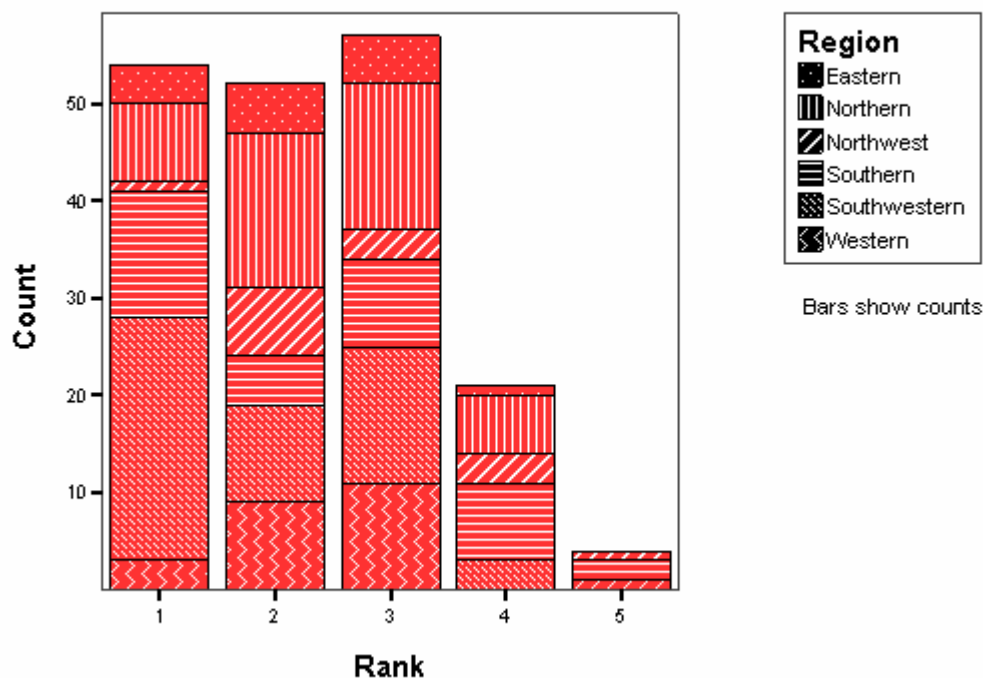
In the *Content Knowledge – Music Theory* area, there were significant interactions between the rankings of *Analyze the Elements of Compositional Organization in a Piece* and class assignment $(\chi^2(20) = 40.85, p < .01)$. Directors who taught both band and orchestra rated *Analyze the Elements of Compositional Organization in a Piece* higher than the overall group and all other sub-groups. These directors rated this skill first place tied with *Possess Fundamental Aural Skills*.

Table 30. Differences in rank of *Content Knowledge – Music Theory* grouped by classes taught

	Overall rank	Band only	Orchestra only	Band and orchestra	B/O and choir	B/O and other music	B/O and other non-music
Detect technical errors in ensemble performances	1	1	1	3	1	1	1
Possess fundamental aural skills (identification of intervals, chords, and rhythms; the ability to play simple melodies by ear).	2	2	2	T1	2	2	2
Analyze the elements of compositional organization in a piece (pitch, scale types, harmony, rhythm, texture, form, timbre, etc.)**	3	3	3	T1	3	3	3
Arrange, re-write, or simplify a piece of music	4	4	4	4	4	4	4
Be familiar with professional journals, organizations, texts, and reference materials	5	5	5	5	5	5	5

** - significant at the $p < .01$ level

A significant interaction was found between the rankings of *Analyze the Elements of Compositional Organization in a Piece* and school enrollment ($\chi^2(12) = 23.84$, $p < .05$). The overall rankings based on the median ranks of the individual scores was third place out of five, but an closer look a the distribution of ranks assigned to *Analyze the Elements of Compositional Organization in a Piece* sorted by school enrollment shows that directors who taught in schools with enrollments greater than 1,500 students distributed their responses evenly across the top four ranks.

Figure 8. Rankings of *Analyze the Elements of Compositional Organization in a Piece* grouped by school enrollment
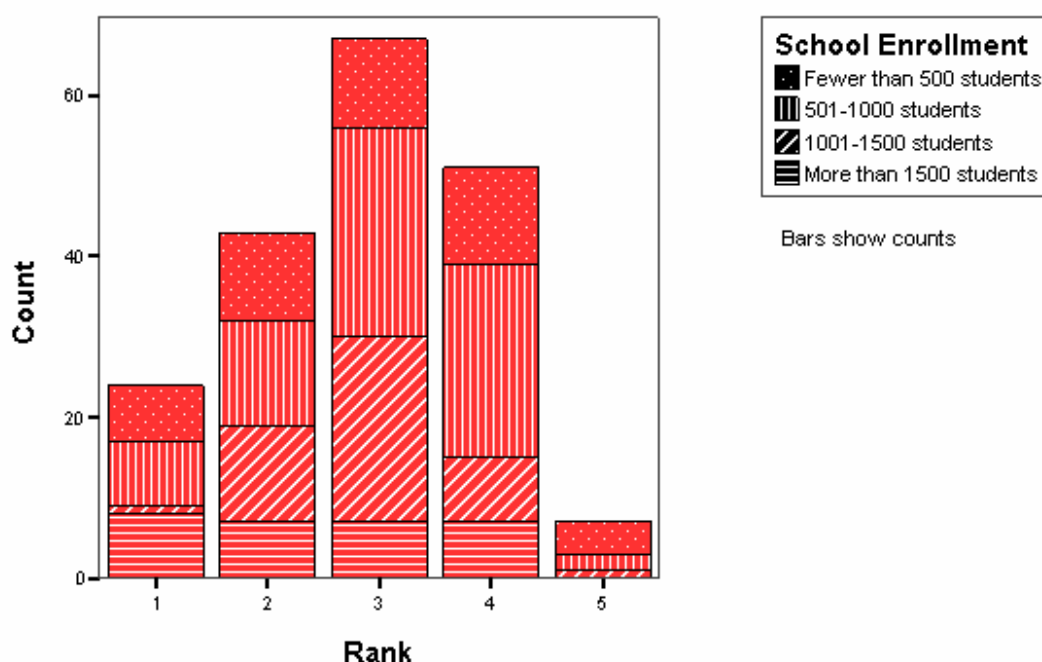
General Pedagogical Knowledge

Two significant interactions were observed within the *General Pedagogical Knowledge* areas of *Establish Orderly Routines* ($\chi^2(25) = 39.51$, *p* < .05) and *Understand How Most People Learn Most Efficiently* ($\chi^2(25) = 41.18$, *p* < .05) when compared with course assignment. These interactions are shown in Table 31. Orchestra directors ranked *Establish Orderly Routines* lower than the overall group, band directors, and instrumental teachers who taught other music classes. Directors who taught both band and orchestra ranked *Establish Orderly Routines* lower than the overall group, band directors, and instrumental teachers who taught other music classes. Directors who taught non-music classes in addition to their band and/or orchestra teaching assignment ranked *Use Body, Voice, Face, and Space Effectively* lower than the overall group. Orchestra directors ranked *Understand How Most People Learn Most Efficiently* higher than the overall group and all sub-groups.

Table 31. Differences in rank of *General Pedagogical Knowledge* when grouped by class assignment

	Overall rank	Band only	Orchestra only	Band and orchestra	B/O and choir	B/O and other music	B/O and Other non-music
Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.*	1	1	4	3	1	1	3
Manage classroom behavior	2	2	3	2	2	2	1
Use body, voice, face, and space effectively	3	3	1	1	3	3	2
Understand how most people learn*	4	5	2	4	4	4	T4
Possess a professional level of written and oral communication skills (grammar, punctuation, spelling, etc.)	5	4	5	6	5	5	T4
Demonstrate an ability and willingness to assess classroom procedures	6	6	6	5	6	6	6

* - significant at the $p < .05$ level

Curriculum Knowledge

In the *Curriculum Knowledge – Performance* area, *Know Specific Ways to Teach Students to Improvise* was ranked last (rank = 8) in by each sub-group when separated by class assignment (see Table 32). Although the median rankings were not affected, a significant interaction was noted in the individual rankings in this category ($\chi^2(30) = 44.24$, $p < .05$). Directors who taught both band and orchestra ranked *Know Specific Ways to Teach Students to Improvise* slightly higher than all other sub-groups (see Figure 9).

Figure 9. Rankings of *Know Specific Ways to Teach Students to Improvise* grouped by classes taught
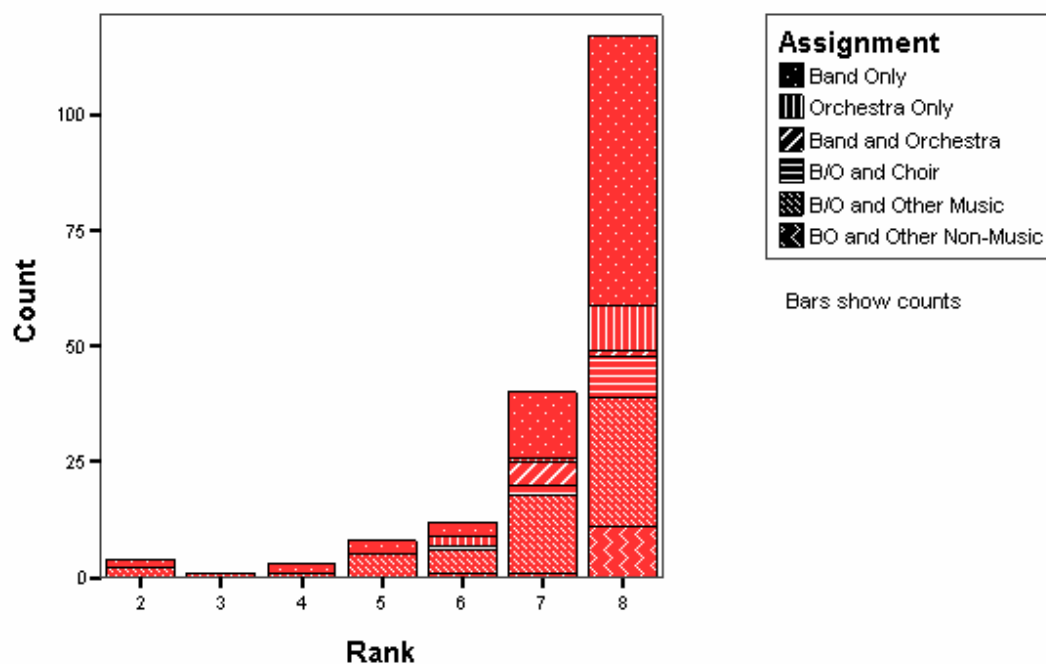
Table 32. Rank order differences in *Curriculum Knowledge – Performance* when grouped by teaching experience

	Overall Rank	0-5 years	6-10 years	11-20 years	21-30 years	More than 30 years
Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure	1	1	1	1	1	1
Know specific ways of teaching steady pulse and accurate rhythm	2	2	2	2	2	2
Know specific methods to teach students to read and write musical notation	3	4	T3	5	3	3
Know specific ways of teaching technical facility*	4	6	T3	4	4	4
Know specific warm up routines and exercises*	5	3	5	3	5	5
Know specific ways to teach musical phrasing	6	5	6	6	6	6
Develop yearly plans to ensure development of individual and ensemble skills	7	7	7	7	7	7
Know specific ways to teach students to improvise	8	8	8	8	8	8

* - significant at the $p < .05$ level

Significant interaction was found between the rankings of *Warm-Up Routines and Exercises* when grouped by teaching experience ($\chi^2(28) = 42.52$, $p < .05$). Teachers with between zero and five years of teaching experience ranked *Warm-Up Routines and Exercises* higher than the overall group (see Table 33). Teachers with between eleven and twenty years of experience rated that skill higher than the overall group. The rankings among all sub-groups were highly distributed across all eight importance rankings; there was less of a consensus among the respondents as to the rankings of this item (see Figure 10).

Figure 10. Rankings of *Warm-Up Routines and Exercises* grouped by teaching experience
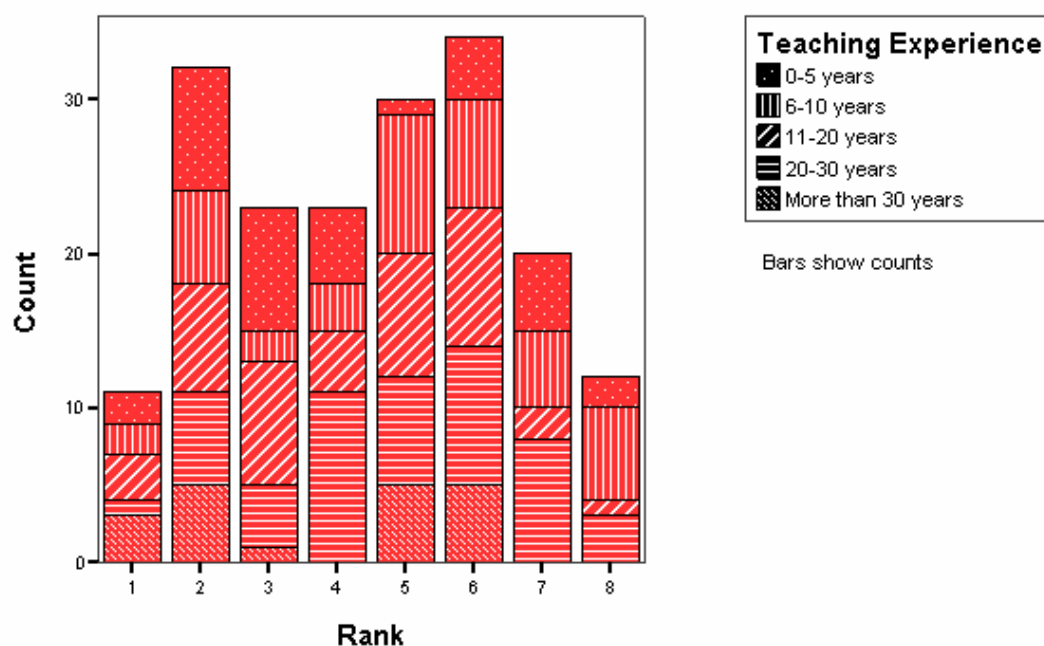
There was significant interaction between the rankings of the *Curriculum Knowledge – Performance* item *Know Specific Ways of Teaching Technical Facility* ($\chi^2(28) = 43.98$, $p < .05$). Teachers with between zero and five years of experience ranked this area lower than the overall group and any other sub-group (see Figure 11).

Figure 11. Rankings of *Know Specific Ways of Teaching Technical Facility* grouped by teaching experience
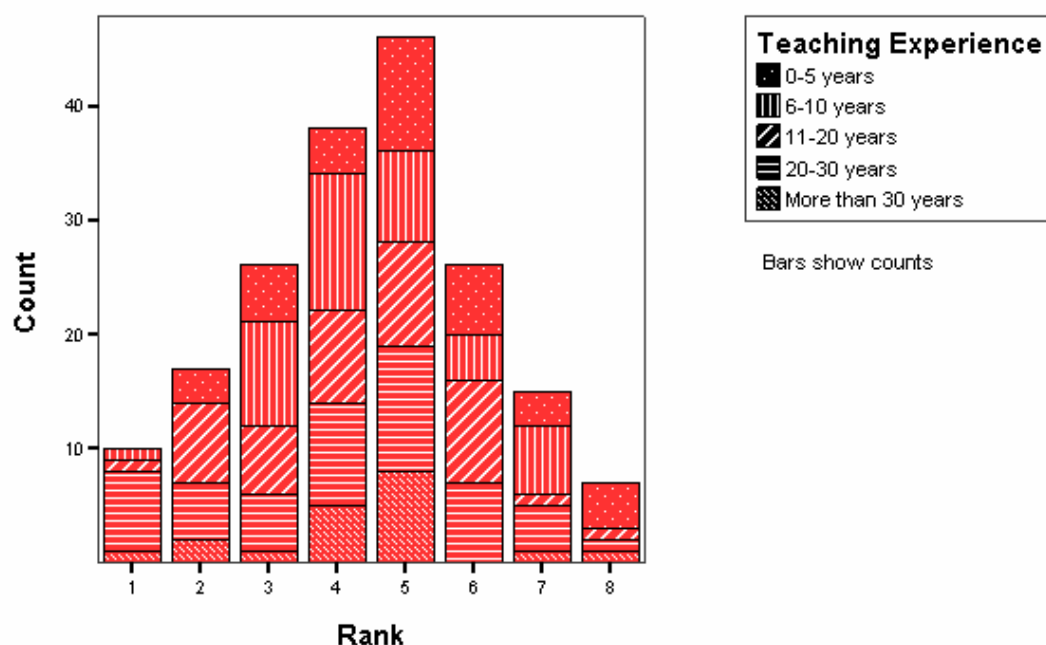
The area in which rankings differed most significantly was that of *Curriculum Knowledge – Non-performance* (see Table 33 and Figure 12). Significant interaction was found between the rankings of *Specific Techniques for Teaching Beginning-Level Classes* and the grade levels taught ($\chi^2(8) = 49.09$, $p < .01$). Not surprisingly, high-school directors ranked *Specific Techniques for Teaching Beginning-Level Classes* slightly lower than the overall group and all other sub-groups. High school directors' rankings were dispersed across all five possible ranks fairly evenly.

Table 33. Rank order differences in *Curriculum Knowledge – Non-performance* grouped by grade level taught

	Overall rank	Junior high/middle school	High school	All-level
Be familiar with specific techniques for teaching beginning-level classes**	1	1	2	1
Identify musical concepts that could be taught within a musical work**	2	2	1	2
Be familiar with a core repertoire of method books and materials for band and/or orchestra	3	3	3	3
Be familiar with a core repertoire of solo, small ensemble, and large ensemble works	4	4	4	4
Know how to use technology in classroom instruction	5	5	5	5

** - significant at the $p < .01$ level

Figure 12. Rankings of *Specific Techniques for Teaching Beginning-Level Classes* grouped by grade level taught
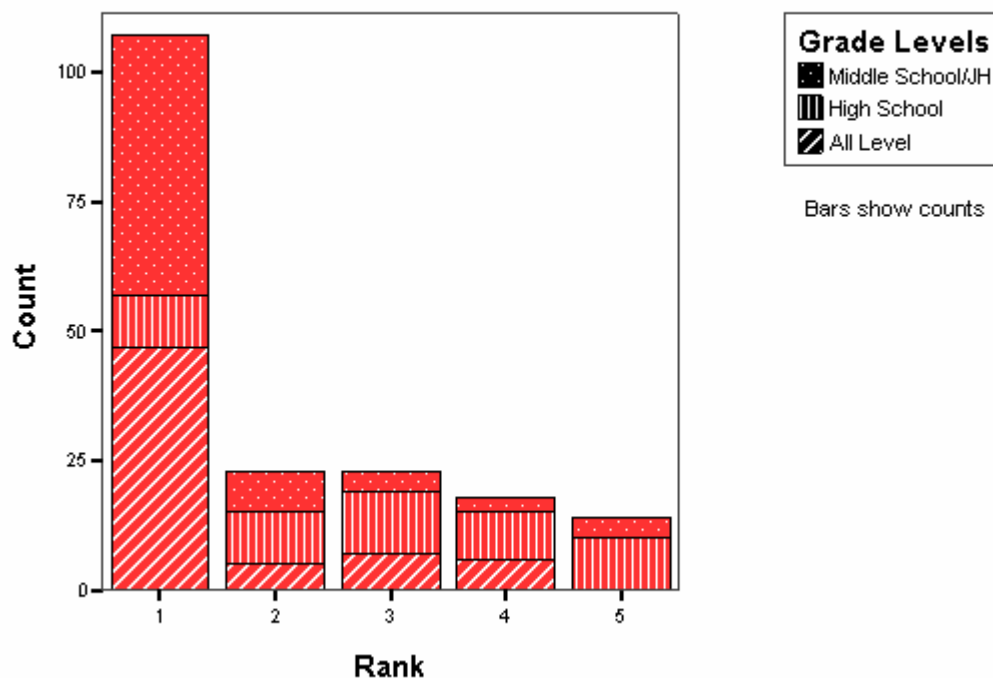
Interaction between the rankings of *Identify Musical Concepts Within a Musical Work* and grade level taught was also found to be significant ($\chi^2(8) = 25.65$, $p < .01$). High-school directors ranked this area slightly higher than other sub-groups (see Figure 13).

Figure 13. Rankings of *Identify Musical Concepts Within a Musical Work* grouped by grade level taught
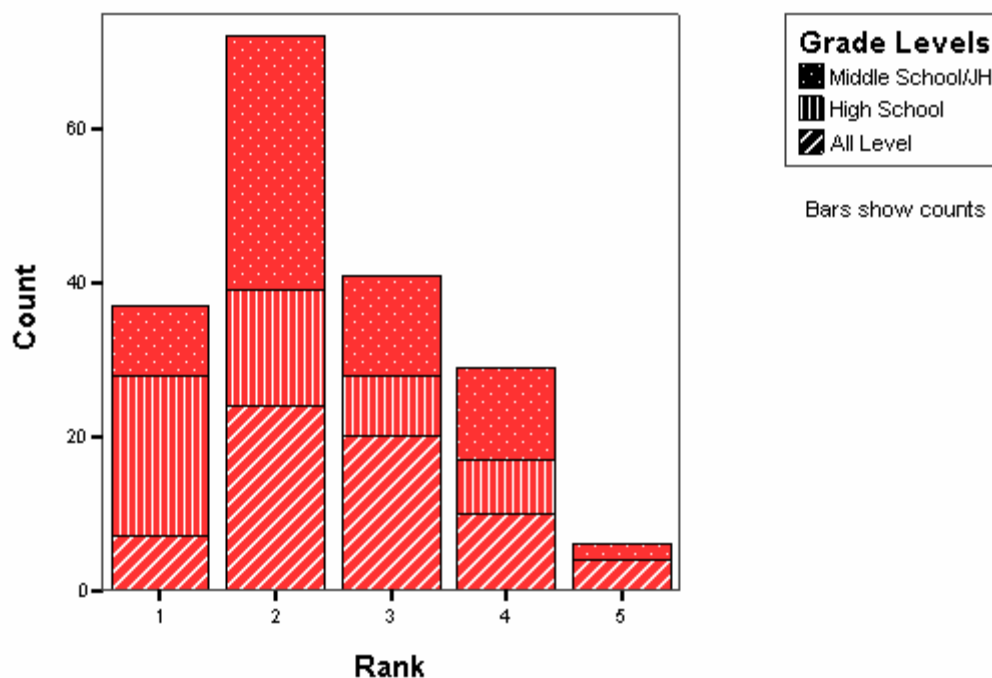
The rankings in these same two areas were found to be significantly different when rankings were grouped by the student enrollments of the school in which teachers worked (see Figures 14 and 15). Directors in schools with enrollments greater than 1,500 students ranked *Specific Techniques for Teaching Beginning-Level Classes* slightly lower than the overall group and all other sub-groups ($\chi^2(12) = 23.38$, $p < .05$). Directors in schools with enrollments greater than 1,500 students ranked *Specific Techniques for Teaching Beginning-Level Classes* almost evenly across the five possible ranks.

Figure 14. Rankings of *Specific Techniques for Teaching Beginning-Level Classes* grouped by size of school enrollment
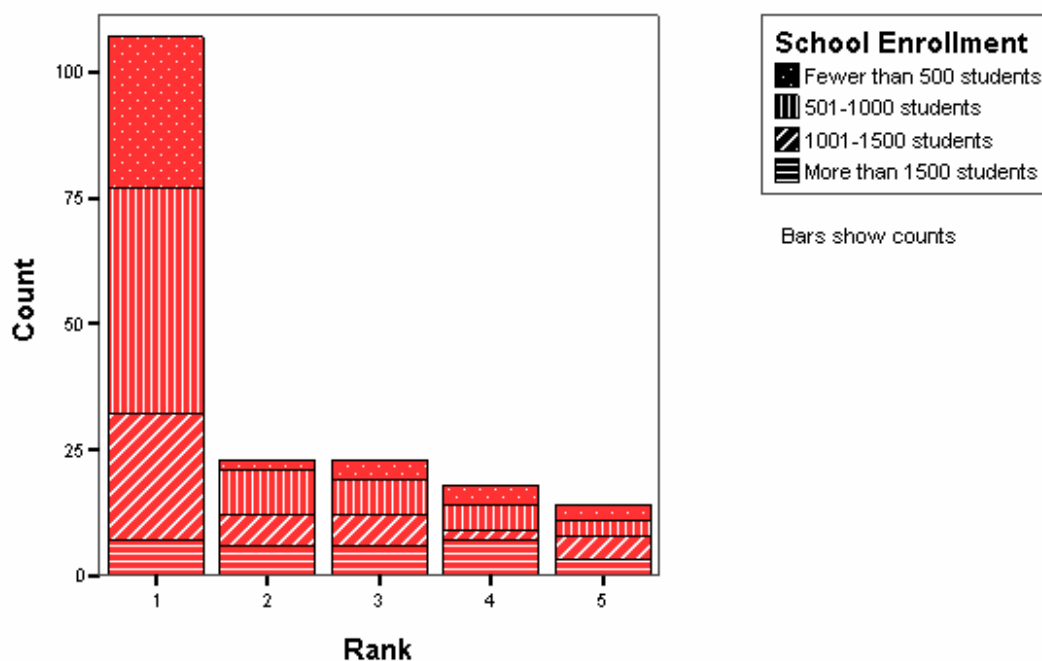
Directors in schools with enrollments greater than 1,500 students ranked *Identify Musical Concepts Within a Musical Work* slightly higher than the overall group and all other sub-groups ($\chi^2(12) = 25.17$, $p < .01$).

Figure 15. Rankings of *Identify Musical Concepts Within a Musical Work* grouped by size of school enrollment
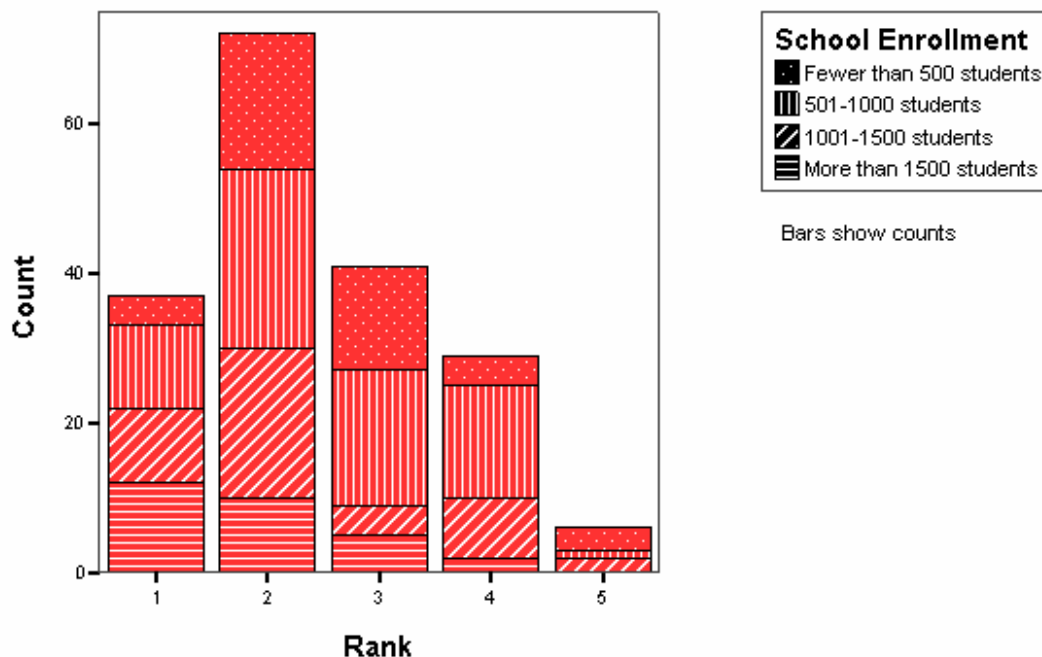
There was also significant interaction between the rankings of *Knowledge of Method Books and Materials* when grouped by number of years of teaching experience ($\chi^2(16) = 33.29$, *p* < .01). Directors with more than 30 years of experience rated *Knowledge of Method Books and Materials* slightly higher than the overall group and all other sub-groups (see Table 34).

Table 34. Ranking differences in *Curriculum Knowledge – Non-performance* when grouped by teaching experience

	Overall rank	0-5 years	6-10 years	11-20 years	21-30 years	More than 30 years
Be familiar with specific techniques for teaching beginning-level classes	1	1	1	1	1	1
Identify musical concepts that could be taught within a musical work	2	2	2	2	2	3
Be familiar with a core repertoire of method books and materials for band and/or orchestra**	3	3	3	3	3	2
Be familiar with a core repertoire of solo, small ensemble (chamber), and large ensemble (full band and/or orchestra) works	4	4	5	4	4	4
Know how to use technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)	5	5	4	5	5	5

** - significant at the *p* < .01 level

Although it is not reflected in a difference of the median ranks, directors with more than twenty years of experience ranked *Knowledge of Method Books and Materials* slightly higher than the overall group and all other sub-groups (see Figure 16).

Figure 16. Rankings of *Knowledge of Method Books and Materials* grouped by teaching experience
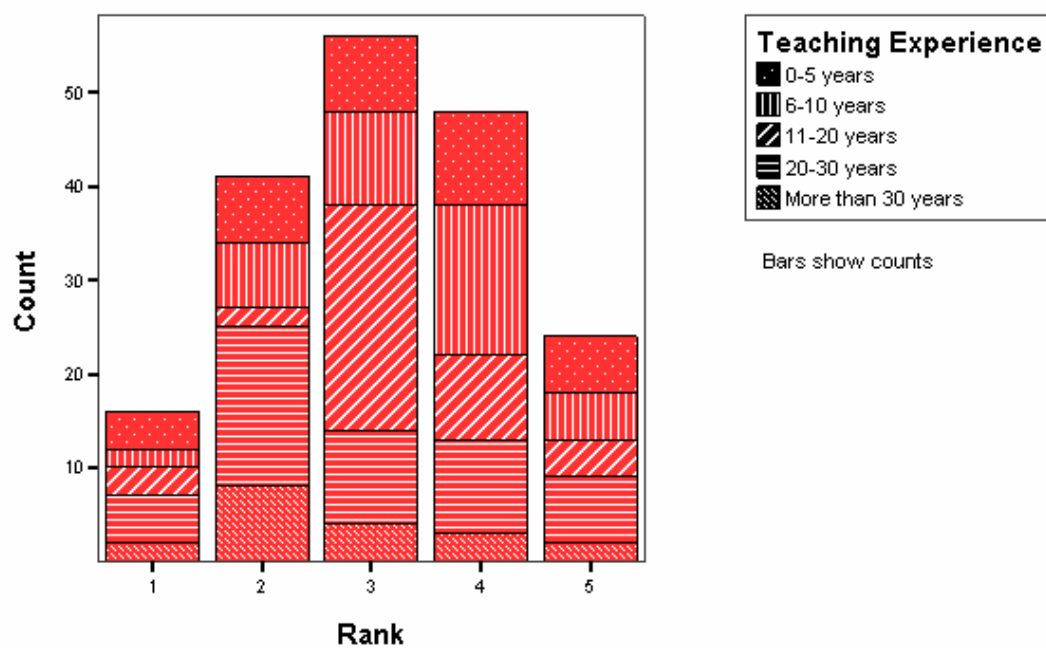
There was also significant interaction between the rankings of *Specific Techniques for Teaching Beginning-Level Classes* and the region of the United States in which directors teach ($\chi^2(20) = 41.22$, $p < .01$). Directors in the Eastern region ranked *Specific Techniques for Teaching Beginning-Level Classes* slightly lower than the other sub-groups (see Table 35).

Table 35. Differences in ranking of *Curriculum Knowledge – Non-performance* when grouped by region of the United States

|	Overall Rank	Eastern	North Central	Northwest	Southern	Southwestern	Western
Be familiar with specific techniques for teaching beginning-level classes**	1	T3	1	1	1	1	1
Identify musical concepts that could be taught within a musical work	2	2	2	2	2	2	2
Be familiar with a core repertoire of method books and materials for band and/or orchestra	3	5	3	3	3	3	3
Be familiar with a core repertoire of solo, small ensemble, and large ensemble works	4	T3	4	4	4	4	4
Know how to use technology in classroom instruction**	5	1	5	5	5	5	5

** - significant at the *p* < .01 level

*Figure 17.* Rankings of *Specific Techniques for Teaching Beginning-Level Classes* when grouped by region of the United States
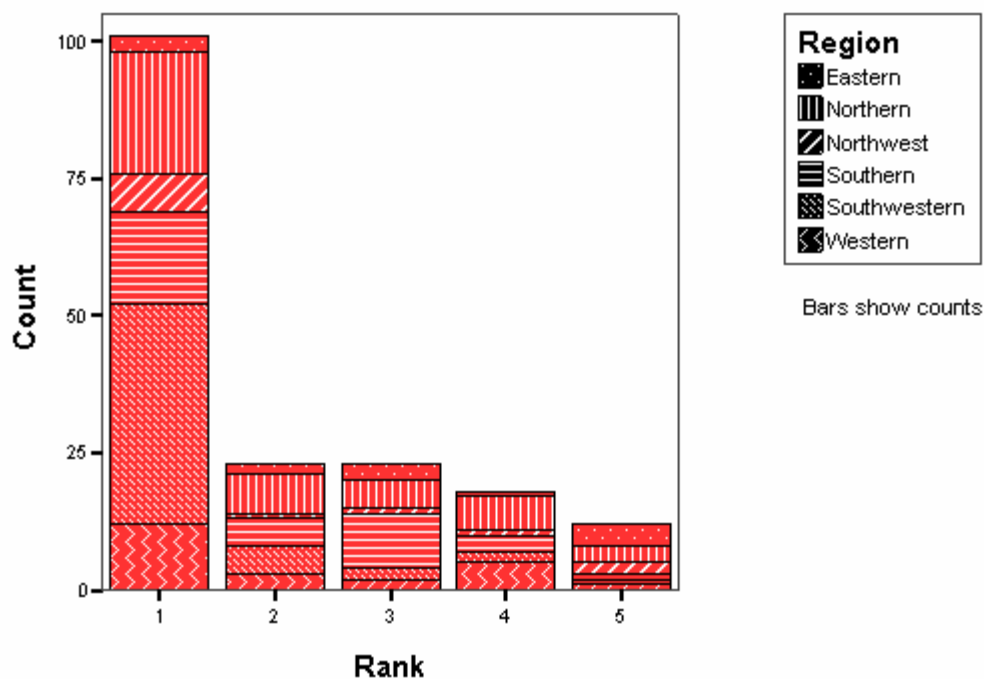
The final area of significant interaction within the *Curriculum Knowledge – Non-Performance* area was that of *Technology in Classroom Instruction* ($\chi^2(20) = 45.37, p < .01$). Directors in the Eastern region ranked this area much more highly than the overall group and all other sub-groups (see Figure 18).

Figure 18. Rankings of *Technology in Classroom Instruction* grouped by region of the United States
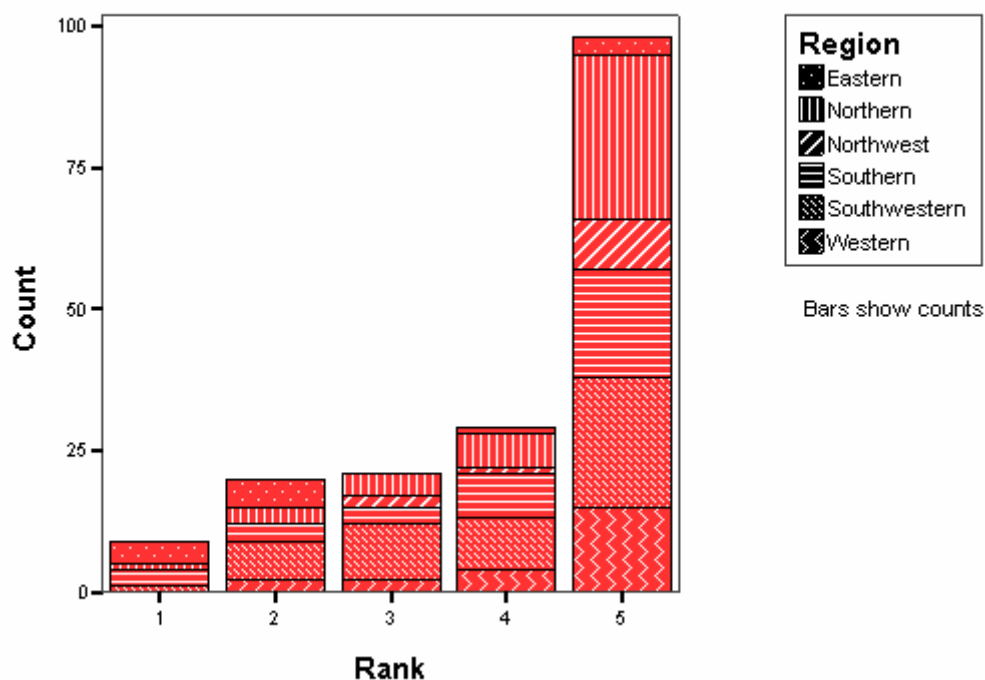
Knowledge of Learners and Their Characteristics

A chi-square test of independence was calculated comparing the rankings of the items in *Knowledge of Learners and Their Characteristics* with the grade levels taught by survey respondents. A significant interaction was found between the rankings of *Recognize and Adapt Presentation of Material to Assist Students with Various Learning Style* and the grade level taught ($\chi2(8) = 18.69, p < .05$). Junior-high and middle-school teachers ranked *Recognize and Adapt Presentation of Material to Assist Students with Various Learning Styles* slightly lower than the overall group; their responses were more evenly distributed across all five possible ranks (see Table 36). These teachers ranked *Awareness of Physical/Social Characteristics of Age Groups* higher than the other sub-groups.

All-level teachers ranked *Recognize and Adapt Presentation for Students With Various Learning Styles* lower than the overall group and each other sub-group. They ranked *Evaluate Physical and Behavioral Characteristics that Contribute to Successful Selection of Appropriate Beginner Instruments* higher than the other sub-groups.

Table 36. Differences in ranking of *Knowledge of Learners and Their Characteristics* when grouped by grade level taught

	Overall rank	Junior high/middle school	High school	All-level
Establish and maintain student motivation	1	1	1	1
Recognize and adapt presentation of material to assist students with various learning styles*	2	3	2	4
Be aware of the social and physical characteristics specific to middle-school and/or high-school students	T3	2	3	3
Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments	T3	4	4	2
Demonstrate knowledge of the particular needs of specific student populations	5	5	5	5

* - significant at the *p* < .05 level

The *Knowledge of Learners and Their Characteristics* item *Knowledge of Needs of Specific Student Populations* interacted significantly with the enrollment size of respondents' schools in which they are currently teaching ($\chi 2(8) = 18.69$, *p* <

.05). Teachers in schools with enrollments greater than 1,500 students ranked

Knowledge of Needs of Specific Student Populations slightly higher than the overall

group and all other sub-groups; their responses were distributed more evenly across

the bottom the four possible ranks (see Table 37 and Figure 19).

Table 37. Differences in rank of *Knowledge of Learners and Their Characteristics* when grouped by school enrollment

	Overall Rank	<500 students	501-1,000 students	1,000-1,500 students	>1,500 students
Establish and maintain student motivation	1	1	1	1	1
Recognize and adapt presentation of material to assist students with various learning styles	2	T2	3	2	2
Be aware of the social and physical characteristics specific to middle-school and/or high-school students	T3	T2	4	4	3
Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments	T3	4	2	3	5
Demonstrate knowledge of the particular needs of specific student populations**	5	5	5	5	4

** - significant at the $p < .01$ level

Figure 19. Rankings of *Demonstrate Knowledge of the Particular Needs of Specific Student Populations* grouped by school enrollment
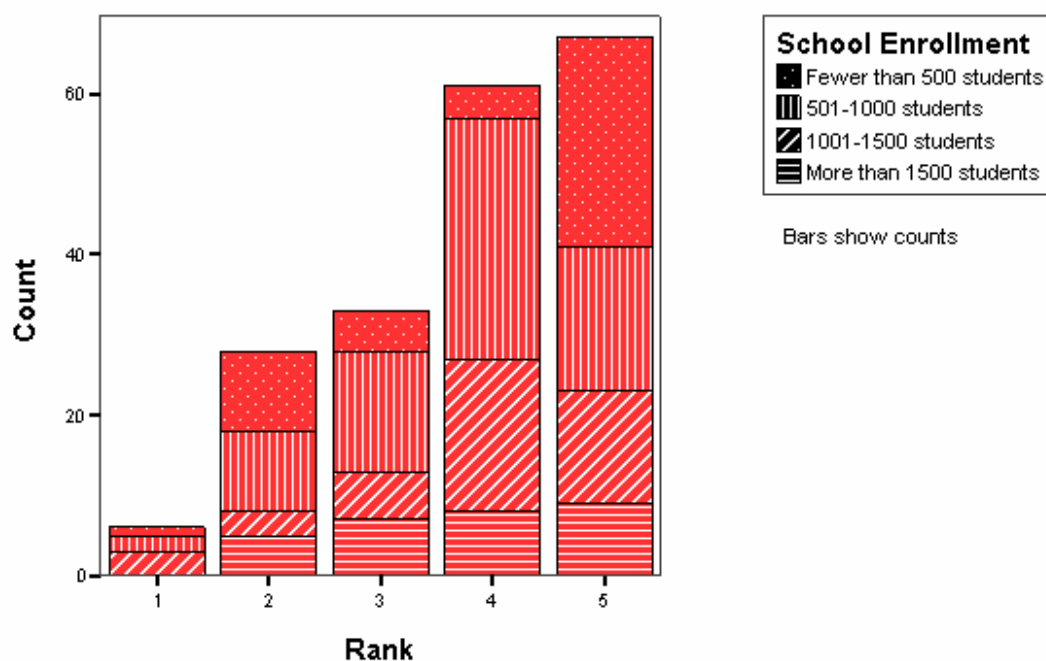
Pedagogical Content Knowledge

In this category, school enrollment size interacted significantly with three categories – *Develop Valid and Reliable Tests and Auditions* ($\chi2(18) = 32.96$, *p* < .05), *Evaluate the Effectiveness of Printed Method Books and Instructional Materials* ($\chi2(18) = 44.13$, *p* < .01), and *Monitor Students' Progress and Change Instruction to Meet Individual and Group Needs* ($\chi2(18) = 44.13$, *p* < .05). Table 38 shows rankings of *Pedagogical Content Knowledge* items grouped by school enrollment.

Table 38. Differences in rankings of *Pedagogical Content Knowledge* when grouped by school enrollment

	Overall Rank	< 500 students	501-1,000 students	1,001-1,500 students	> 1,500 students
Monitor students' progress and change instruction to meet individual and group needs*	1	1	1	1	T2
Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding	2	T2	2	2	1
Prescribe solutions for common performance problems	3	T2	3	3	4
Assess the effectiveness of one's own rehearsal methods	4	4	4	4	T2
Analyze a score to determine the difficulty level, possible problems spots and technical challenges	5	5	5	5	5
Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction**	6	6	6	7	7
Develop valid, reliable, and useful auditions and tests*	7	7	7	6	6

* - significant at $p < .05$ level
** - significant at the $p < .01$ level

Teachers in schools with greater than 1,000 students ranked *Develop Valid and Reliable Auditions and Tests* slightly higher than teachers with fewer than 1,000 students (see Figure 20).

Figure 20. Rankings of *Develop Valid and Reliable Auditions and Tests* grouped by school enrollment
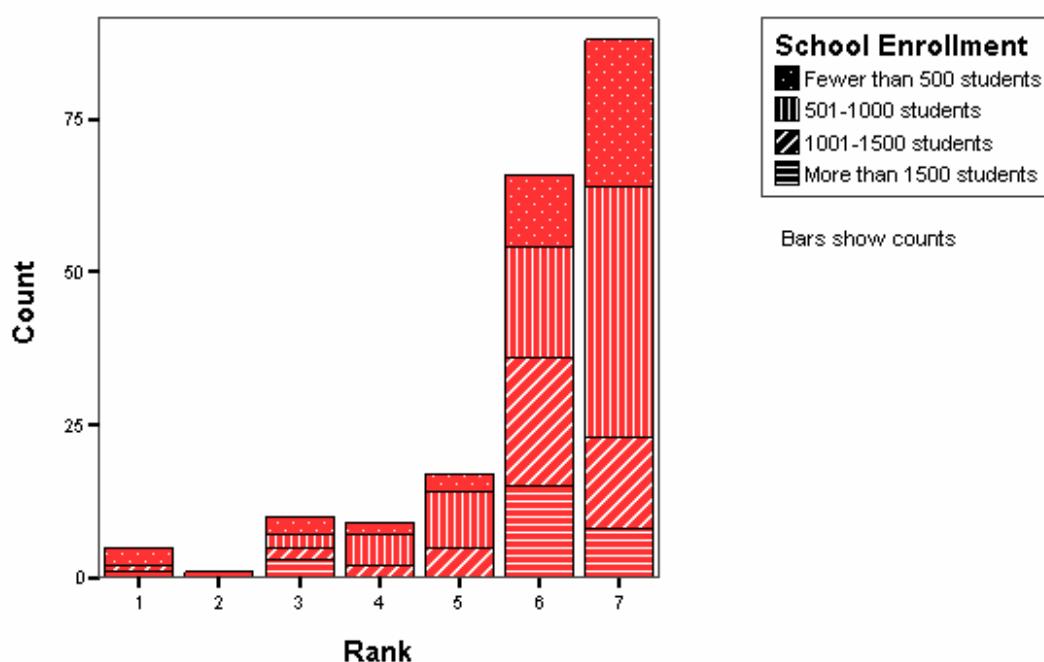
Teachers in schools with enrollments of fewer than 500 students ranked *Evaluate the Effectiveness of Printed Method Books and Instructional Materials* higher than teachers in schools with larger enrollments and higher than the overall group. Teachers in schools with enrollments of between 501 and 1,000 students ranked this same area higher than teachers in schools with larger enrollments and higher than the overall group. In general, teachers in small and mid-sized schools ranked *Evaluate the*

Effectiveness of Printed Method Books and Instructional Materials higher than did

teachers in larger schools (see Figure 21).

Figure 21. Rankings of *Evaluate the Effectiveness of Printed Method Books and Instructional Materials* grouped by size of school enrollment
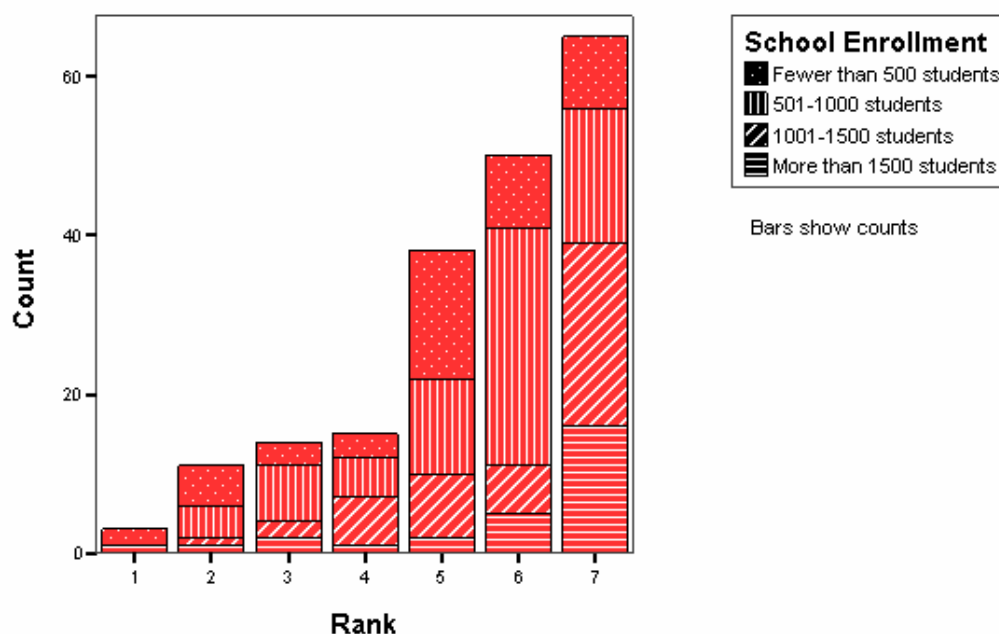
Directors in schools with enrollments greater than 1,500 ranked *Monitor*

Students' Progress and Change Instruction to Meet Individual and Group Needs

lower than the overall group and the other sub-groups (see Figure 22).

Figure 22. Rankings of *Monitor Students' Progress and Change Instruction to Meet Individual and Group Needs* grouped by school enrollment
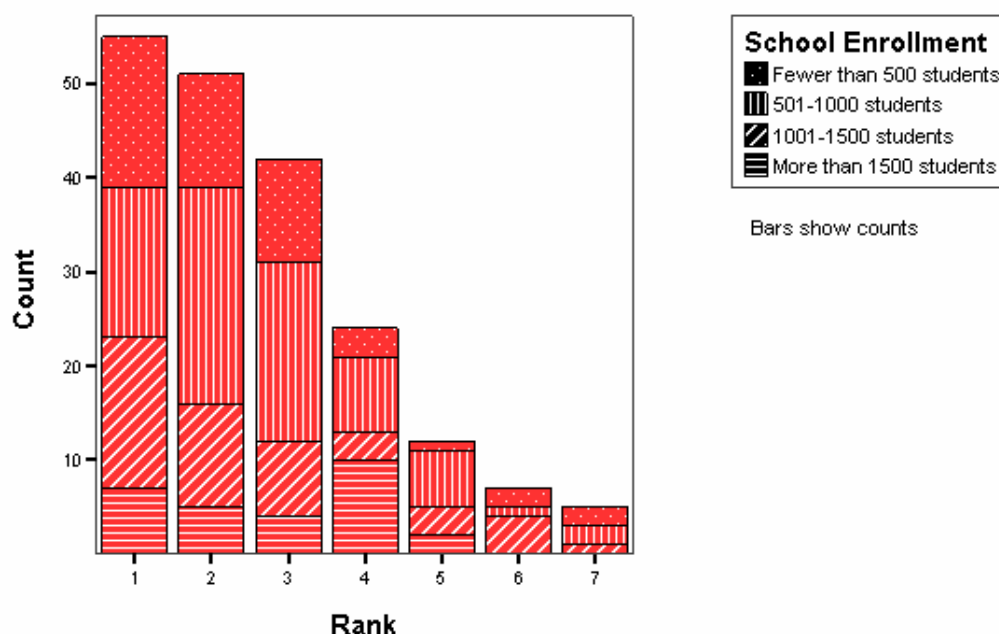
Summary

A total of 214 band and orchestra directors responded to 850 e-mail invitations to participate in the nationwide survey for a response rate of 25.2%. The first research question was designed to uncover which knowledge and skills defined in research literature were thought to be most important to professional success by secondary instrumental music teachers. Survey respondents were asked to rank individual items in five pedagogically-based areas of knowledge that were organized within a framework after that of Schulman (1986, 1987). The survey respondents were also asked to rank the seven Schulman areas themselves using a paired-

comparison technique. The second research question was designed to discover if variables related to respondents' teaching assignment and educational background interacted with the individual rankings of knowledge and skills defined in the research literature.

A paired-comparison technique was used to measure the rankings of the seven Schulman areas. Respondents ranked the seven Schulman areas in the following order from most- to least- important:

1) Pedagogical Content Knowledge

2) Content Knowledge

3) General Pedagogical Knowledge

4) Curriculum Knowledge

5) Knowledge of Learners

6) Knowledge of Educational Contexts

7) Administrative Knowledge

The top three areas, *Pedagogical Content Knowledge*, *Content Knowledge*, and *General Pedagogical Knowledge* were separated from the other items in the positive end of the power-level rankings; these categories were preferred more often than the other four areas. There was no significant interaction between the rankings of these seven areas and the variables related to respondents' teaching assignment and educational background.

The rankings of these seven areas were nearly identical to the results from the pilot study utilizing a convenience sample of band and orchestra directors in the central Texas area. The top three areas, *Pedagogical Content Knowledge, Content*

Knowledge, and *General Pedagogical Knowledge* were all ranked markedly higher than the other five areas. *Pedagogical Content Knowledge* was the highest ranked category in both the pilot study and the main study.

Survey respondents in the primary study were asked to rank individual items within each of five of the Schulman categories directly related to classroom instruction. The grouped median of the rank-order data for each item in each category shows the overall rank for the entire group. The rankings for items within each category were almost identical to those of the pilot group. The ranks of each item from the primary study are summarized below.

Content Knowledge – Non-performance

1) Know the fundamental characteristics of instruments

2) Understand basic physical requirements that promote success on individual instruments

3) Possess broad knowledge of Western art music

4) Integrate instruction in music with other arts and with subjects outside the arts

5) Know federal and state laws that impact instruction

6) Possess knowledge of world and ethnic music

Content Knowledge – Performance

1) Conduct well enough to lead an ensemble in effective rehearsals and performances

2) Demonstrate characteristic tone and technique on primary instrument

3) Demonstrate strong sight-reading ability

4) Model characteristic tone production on secondary instrument(s)

5) Possess piano performance skills adequate to analyze works and accompany music for current teaching level

Content Knowledge – Music Theory

1) Detect technical errors in ensemble performances

2) Possess fundamental aural skills

3) Analyze the elements of compositional organization in a piece

4) Be familiar with professional journals, organizations, texts, and reference materials

General Pedagogical Knowledge

1) Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.

2) Manage classroom behavior

3) Effectively communicate with students through appropriate use of voice, body, face, and space

4) Understand how most people learn most efficiently

5) Possess a professional level of written and oral communication skills

6) Demonstrate an ability and willingness to assess classroom procedures

Curriculum Knowledge – Performance

1) Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure

2) Know specific ways of teaching steady pulse and accurate rhythm

3) Know specific methods to teach students to read and write musical notation

4) Know specific ways of teaching technical facility

5) Know specific warm up routines and exercises

6) Know specific ways to teach musical phrasing

7) Develop yearly plans to ensure development of individual and ensemble skills

8) Know specific ways to teach students to improvise

Curriculum Knowledge – Non-performance

1) Be familiar with specific techniques for teaching beginning-level classes

2) Identify musical concepts that could be taught within a musical work

3) Be familiar with a core repertoire of method books and materials for band and/or orchestra

4) Be familiar with a core repertoire of solo, small ensemble, and large ensemble works

5) Know how to use technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)

Knowledge of Learners and their Characteristics

1) Establish and maintain individual student motivation

2) Recognize and adapt presentation of material to assist students with various learning styles

3) Be aware of the social and physical characteristics specific to middle-school and/or high-school students

4) Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments

5) Demonstrate knowledge of the particular needs of specific student populations (exceptional learners, English-language learners, advanced students, students who need more help, etc.)

Pedagogical Content Knowledge

1) Monitor students' progress and change instruction to meet individual and group needs

2) Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding

3) Prescribe solutions for common performance problems

4) Assess the effectiveness of one's own rehearsal methods

5) Analyze a score to determine the difficulty level, possible problems spots and technical challenges

6) Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction

7) Develop valid, reliable, and useful auditions and tests

In order to determine how variables related to respondents' teaching assignment and educational background interacted with the individual rankings of knowledge and skills defined in the research literature, chi-square tests of independence were performed within each of the five pedagogically-based Schulman areas. Rankings of the items within each category were analyzed for potential interaction with eight variables:

(a) the subject area(s) taught,

(b) grade level(s) taught,

(c) the enrollment size of the instructor's school,

(d) the general geographic location within the United States of the respondent's school,

(e) the number of full-time instrumental music teachers assigned to the respondent's primary campus,

(f) the amount of teaching experience in his or her primary subject area,

(g) the size of the undergraduate institution from which the teacher received his or her degree, and

(h) the amount of early field experience that was required in conjunction with their undergraduate degree programs.

Of 368 interactions between these eight variables and the individual items in each category, twenty-four (6.5%) were significant. Some of these differences in directors' ratings made only minor differences in the overall median ranks. Five of the twenty-four significant interactions (20.8%) dealt with differences in items that

were ranked in the top two spots within the categories of *Pedagogical Content Knowledge* and *Curriculum Knowledge* areas; survey respondents ranked these items either most important or second most important. Four of the twenty-four significant interactions (16.7%) dealt with differences in the bottom two items within *Content Knowledge, Knowledge of Learners and Their Characteristics,* and *Pedagogical Content Knowledge*. Respondents ranked these items either least important or one rank higher. Three of the twenty-four significant interactions (12.5%) dealt with differences in only one ranking slot in the middle of the importance range and occurred in the *Content Knowledge* and *Curriculum Knowledge* categories. Two of the twenty four significant interactions (8.3%) did not change the rankings of the items at all within the various sub-groups. The significance in their interactions lies in the way that different sub-groups dispersed their ratings across the scale. These items fell into the *Content Knowledge* and *Curriculum Knowledge* areas.

The largest number of significant interactions resulted in large differences in rankings. Ten of the twenty-four significant interactions (41.7%) fell into this group and included items in the *Content Knowledge, General Pedagogical Knowledge, Curriculum Knowledge,* and *Knowledge of Learners and Their Characteristics*. There was more wide-spread disagreement in rankings across various sub-groups in items in these categories. Table 39 shows which independent variables interacted significantly with each Schulman category. Table 40 presents this information grouped by independent variable.

Table 39. Significant interactions between independent variables and five Schulman categories grouped by category

Schulman category	Independent variables with significant interaction
Content Knowledge	• Teaching assignment • Staff size • School enrollment • Region • Teaching experience
General Pedagogical Knowledge	• Class assignment
Curriculum Knowledge	• Class assignment • Teaching experience • Grade level taught • School enrollment • Region
Knowledge of Learners and Their Characteristics	• Grade level taught
Pedagogical Content Knowledge	• Enrollment size

Table 40. Significant interactions between independent variables and five Schulman areas grouped by variable

Independent variable	Schulman categories with significant interaction
Enrollment size	• Curriculum Knowledge • Knowledge of Learners and Their Characteristics • Pedagogical Content Knowledge
Class assignment	• Content Knowledge • General Pedagogical Knowledge • Curriculum Knowledge
Staff size	• Content Knowledge
Region	• Content Knowledge • Curriculum Knowledge
Grade level taught	• Curriculum Knowledge • Knowledge of Learners and Their Characteristics
Teaching experience	• Content Knowledge • Curriculum Knowledge

There were no significant interactions between any of the rankings of any of the items and variables associated with the size of college or amount of early field experience completed by the respondents. A discussion of these findings as well as implications for further research is presented in the following chapter.

V. DISCUSSION

Overall Rankings of Knowledge and Skills

Research question one addressed the ranking of knowledge and skills by band and orchestra teachers. The results of this study indicate that instrumental music teachers are consistently able to rank the knowledge and skill components of a knowledge base for music teaching. Instrumental music teachers had greatest agreement in their rankings of items within the categories of *Content Knowledge* and *Knowledge of Learners and Their Characteristics*. Music teachers in this study valued knowledge of the fundamentals of the instruments they teach and an understanding of the physical requirements that are needed to be successful on these instruments. There was also widespread general agreement on the importance of establishing and maintaining student motivation.

Instrumental teachers also agreed that conducting and performance skills on their primary instruments were the most valuable *Content Knowledge – Performance* components. The most valued *Music Theory* skill component was the identification of performance errors in ensemble performance.

There was also widespread agreement in the rankings of the seven Schulman categories. The separation of *Pedagogical Content Knowledge, Content Knowledge*, and *General Pedagogical Knowledge* from the remainder of the seven areas was a duplication of the results found in the pilot study and was remarkably consistent across every demographic variable in the primary study. The applicability of the Schulman framework to music education, the implications of rankings of individual items within each category, a discussion of the most important significant interactions

among these rankings and selected variables in the study, implications for music-

teacher education, and recommendations for further research are discussed below.

The Schulman Framework and its Application to Music Education

The results of this study indicate that the Schulman (1986, 1987) framework is

both reliable and valid when used to classify and organize the skills and knowledge

instrumental music teachers in public schools use on a daily basis in their classrooms.

The overall rankings of the seven categories (see Table 16 in Chapter IV) were almost

identical to the rankings of the pilot study. In addition, there were no significant

differences in the rankings of the seven areas on the bases of subject area, grade level,

school enrollment size, geographic location, number of full-time instrumental music

teachers, teaching experience, size of undergraduate institution, or the amount of

early field experience completed by directors. Although many of the respondents'

comments (see Appendix H) addressed the difficulty they experienced placing items

in rank order, and several complained about being "forced" to make the paired

comparison choices, their responses were remarkably consistent. This consistency

across a wide range of variables and the similarity of the rankings of these categories

in both the pilot and main study was an unexpected confirmation of the applicability

of the Schulman model to instrumental music education.

The way in which the respondents' rankings of the Schulman categories

clustered helped confirm the structure of the framework. In both the pilot study and

the main study, the three highest-ranked categories, *Pedagogical Content Knowledge,*

Content Knowledge, and *General Pedagogical Knowledge*, clustered at the top of the

rating scale (see Figure 3 in Chapter IV). These three categories were all preferred

more often than the other four by an overwhelming majority of the respondents. This finding is similar to those of Ballentyne and Packer (2004) in which *Pedagogical Content Knowledge* was rated as the most-valued category of knowledge and skill among instrumental music teachers.

The results also appear to confirm the idea that the two lowest-ranked areas function as either a framework for the five pedagogical areas, as in the case of *Knowledge of Educational Contexts*, or in the case of *Administrative Knowledge*, as a foundation for the other areas (see *Figure 2* in Chapter II). Survey respondents clearly separated these two categories from the other five areas, and many of their written comments addressed the underlying fundamental importance of these items even though they may have been ranked lower in comparison with the other areas (see Appendix H). One respondent wrote, "Administrative tasks and communication with the community are vital to my job, and yet I found myself not ranking it as high as the teaching things" (Comment 38).

It appears through these rankings that these practitioners recognize that content comprehension and pedagogical skill alone, while important, are only effective when they are combined in such a way as to connect with students' prior learning and preconceptions of musical concepts. This *Pedagogical Content Knowledge* is the primary way in which we distinguish the musician from the music educator. Practitioners value the successful balance of all seven Schulman areas; this notion was confirmed over and over again by the majority of the comments that directors made in the survey (see Appendix H). As one respondent wrote, "It is frustrating having to rate things that are ALL important. Which is more important in

running a race, your right foot or your left foot?" (Comment 34). Another added,

"Music teachers that are very successful are not one dimensional in any manner"

(Comment 18).

<div align="center">*Rank Does Not Equal Importance*</div>

As was mentioned earlier, the rankings teachers gave to items were relative

only to the other items being ranked; a low ranking does not relegate an item or

category to the "unimportant" list. Even in the instrument-verification process, the

music education professors rated 91% of the items as at least "moderately important"

in direct confirmation of previous findings (Colwell, 1985).

Many of the directors commented that one of the frustrations they experienced

with the completion of the survey was that they were forced to rank items that they

felt were important in lower slots (see Appendix H). One respondent wrote, "Please

do not interpret my 5's, 6's, 7's, and 8's as unimportant. What we do is very complex

and requires attention to all of the entries" (Appendix H, Comment 3). Another

director spoke to the complexity of the teaching act as the primary reason ranking

items in the survey was difficult:

> It is very hard to place any of these things above the others, because it is a unique balance of all of the skills mentioned in this survey that make for effective teaching and working in a school environment. The relative importance of these skills vary from day to day, and even class to class depending on what is happening in the class, with the students, with the teacher, and even with the weather. It is the ability to use all of the skills mentioned here in a flexible way to be a truly skilled educator (Comment 12).

This statement confirms the complications associated with classifying

elements encountered in the complex environment of classrooms (Bresler, 1993;

Brule, 1985). Some directors pointed out that there was a difference in the "daily

importance" of an item versus the "important when you need it" kind of importance;

as one director commented, "The 'daily' importance does not necessarily reflect overall importance" (Comment 37).

The relationship of the rankings of *Pedagogical Content Knowledge* and *Content Knowledge* reflects their interrelatedness. The fact that *Pedagogical Content Knowledge* was ranked consistently at the top of the rating scale reflects the value of that skill by a diverse group of music teachers. The ranking of this skill, which is itself representative of the complex delivery process of musical concepts, helps to solidify the notion that knowledge of musical facts and performance ability on musical instruments are not sufficient in themselves to guarantee teaching success (Berliner, 1986; Clifford & Guthrie, 1988; Davidson, Moore, Sloboda, & Howe, 1998; Good, 1990; Greher and Tobin, 2006; Kennedy, 1987). The ranking of *Content Knowledge* near the top of the scale helps reinforce the notion that performance ability and factual knowledge are key components to a successful music-teacher education.

<div align="center">Significant Interactions</div>

Research question two investigated how variables related to respondents' teaching assignment and educational background interact with the rankings of the individual areas of knowledge and skills defined in the research literature. Chi-square tests of independence revealed no significant interactions between the rankings of the seven Schulman areas and subject area, grade level, school enrollment, geographic location, number of full-time instrumental music teachers, teaching experience, size of respondents' undergraduate institutions, or the amount of early teaching experience. Chi-square tests of independence were also performed comparing these

same variables with the rankings of items within each of these broad categories. Of 368 possible interactions, twenty-four were significant.

Some of these interactions are discussed below. The interactions that corresponded with small variations in rankings, such as those in which one demographic group rated a skill as second-most important while the group as a whole ranked the same skill as most important, lack practical significance and are not discussed in detail. While these minor differences in rankings may indicate trends based on membership in various sub-groups, a thorough investigation of these trends is beyond the scope of this study.

Five statistically significant interactions occurred in categories that had practical implications in the ways various groups ranked items. There was a significant regional difference in the way the *Content Knowledge* area of *Demonstrate Characteristic Tone and Technique on Primary Instrument* was ranked (see Table 29 in Chapter IV). Directors in the Southwestern region ranked this as the top skill in the *Content Knowledge – Performance* category while directors in the Northwest ranked it fifth. While there have been some studies that compare issues such as recruitment on a national scale (Light, 2006), there has yet to be a nationwide study that investigates regional differences in the value of tone and technique. This finding reflects anecdotal assertions that tone and technique in bands and orchestras in the Southwest are more consistent than those of ensembles in the Northwest. This is not to imply that one region is "better" or "worse;" only that issues of tone and technique may receive greater or lesser emphasis and valuation in different regions of the United States. More research is needed in this area to confirm this notion.

One of the more significant interactions occurred between the *Content Knowledge* skill of *Analyze Elements of Compositional Organization in a Piece* and *Class Assignment* (see Table 30 in Chapter IV). While teachers who were assigned to classes in which they directed both band and orchestra rated this skill higher than the overall group and any other sub-group, this difference may be related to the low number of responses in that particular group. Only seven respondents identified themselves as teachers of band and orchestra, so any significant interaction should be viewed with skepticism as to the generalizability of such a finding. A study with this specific research question may reveal more significant and meaningful results.

One of the most striking significant interactions was that between the *General Pedagogical Knowledge* area of *Establish Orderly Routines* and *Class Assignment*. While the consensus ranking of this item was at the very top of the list, orchestra directors ranked this skill four ranks lower than the overall group (see Table 31 in Chapter IV) and rated *Use Body, Voice, Face, and Space Effectively*, *Understand How Most People Learn*, and *Manage Classroom Behavior* higher. While studies that document what orchestra teachers value in the *General Pedagogical Knowledge* area could not be found, and no research could be located that describes differences in approaches to this area between directors of different types of ensembles, the differences in the ratings in this category do suggest that orchestra teachers approach their classes in different ways than do band teachers. One underlying factor that may influence this difference is the generally smaller size of many orchestral classes when compared to band classes. Smaller classes may have less need for strict regimented routines found in larger classes. No information was collected from survey

participants regarding the size of their classes. Again, no qualification of "better" or "worse" is implied in the discussion of this finding, but an important difference between orchestra teachers' approach and band teachers' priorities is noted. More research is recommended into the effect of class size on elements within the area of *General Pedagogical Knowledge* as it relates to teaching musical ensembles.

There was significant interaction between *Know Specific Ways of Teaching Technical Facility* and *Teaching Experience* (see Table 32 in Chapter IV). Younger teachers, those with less than six years of experience, rated this skill much lower than the overall group. Experienced teachers, those with between six and ten years of experience, rated this skill slightly higher than the overall group. Differences in perceptions of teachers with differing amounts of teaching experience have been noted before (e.g. Berliner, 1986). This is not to imply that novice teachers felt *Technical Facility* was unimportant, but these teachers felt that other areas were deserving of more attention overall. Undergraduates are rightfully concerned with the development of technical facility on their primary instruments during their undergraduate years, and they may fail to recognize the importance of the information related to the development of technical development on other instruments as it is presented to them in their methods classes. As teachers develop, they appear to value techniques for the development of technical facility more. Experience in situations in which technical facility is valued highly by adjudicators at contests may also influence this priority shift.

Significant interaction was also observed in the areas of *Know How to Use Technology in Classroom Instruction* and *Region* (see Table 35 in Chapter IV).

Directors in the Eastern region ranked this skill as the most important item within the five skills described in *Curriculum Knowledge – Non-performance*. All other sub-groups rated this skill at the very bottom – fifth place out of five. No published research regarding regional differences in the value and extent of technology use in music education could be located. One possible explanation for this difference may be an emphasis on individualized instruction in the Eastern region. In this approach, smaller groups of students, or even individual lessons, are a primary skill-teaching component of music education. Directors may be more inclined and able to use technological aids such as computer accompaniment software, recording equipment, internet-based lessons, etc. More research into the regional differences in the value of technology is recommended.

The final area of significant interaction was observed in the area of *Knowledge of Learners and Their Characteristics* (see Table 36 in Chapter 4). Directors at all grade levels ranked *Establish and Maintain Student Motivation* highest, but significant differences were observed in how they ranked *Recognize and Adapt Materials to Assist Students with Various Learning Styles.* Middle school teachers rated *Awareness of Social and Physical Characteristics Specific to Middle-school and/or High-school Students* higher. The unique nature of the adolescent learner and the challenges of teaching at this grade level most likely influence the rankings in this category.

All-level directors, those who taught both middle-school and high-school, ranked *Adapt Presentation to Assist Students with Various Learning Styles* much lower than the overall group and all other subgroups. These teachers rated *Evaluate*

Physical and Behavioral Characteristics for Successful Selection of Beginner Instruments and *Awareness of Social and Physical Characteristics of Middle-school and/or High-school students* above this skill. All-level teachers appreciate the importance of placing students on instruments that are well-suited to their success; these teachers see the long-range implications of inappropriate placements as students progress through their programs. These teachers also recognize the social and physical development of students as they move from beginning band and orchestra through graduation.

<div align="center">Implications for Music-Teacher Education Programs</div>

Music education program design, as well as individual courses and experiences within the overall program, can benefit from a careful examination of both the individual rankings of items within each of the Schulman categories and by how the categories themselves were rated by teachers. The practitioner ratings of items within each individual category addresses the movement in general teacher education, and more specifically in music-teacher education, regarding the grounding of the content and activities preservice teachers experience in the realities of the teaching world (Darling-Hammond, 2006). Certainly the highest-ranked items within each category should be reinforced though a variety of experiences in undergraduate programs. The practitioner ratings of the Schulman categories themselves, specifically the fact that both *Content Knowledge* and *Pedagogical Content Knowledge* clustered consistently at the top of the importance ratings, reinforce the notion that content knowledge is important, but not sufficient to guarantee effective teaching (Davidson, Moore, Sloboda, & Howe, 1998).

It appears that acquisition of pedagogical and content knowledge may be most effective when accompanied with ample opportunities for preservice teachers to contextualize their knowledge through observation and interaction with experiences related to public-school teaching. Nagle (2004) writes that "the intersection of beliefs and participation" is the vehicle that moves teachers from content knowledge to pedagogical content knowledge (p. 156). These intersections can be found in guided early field experiences (Wolfgang, 1990), laboratory classes that include microteaching opportunities (Butler, 2001; Miller, 2001; Paul, 1998), case studies (Conway, 1997, 1999; Lind, 2001), and ample opportunities to reflect upon the effectiveness of teaching and planning activities (Barry, 1996). This relationship confirms the work of Segal (2004) in recognizing that the successful blend of content and pedagogy is the hallmark of powerful teacher education programs.

Music education faculty should recognize that individual components of a useful knowledge base are acquired outside of the typical music education course. Many of the most important skills and knowledge that practicing music teachers possess were developed in experiences outside of courses directly supervised by music education faculty: private lessons, small and large ensembles, student teaching, instrument techniques classes, music theory, music history, and coursework in the college of education (Cooper, 1994; Gohlke, 1994; Jennings, 1988). Preservice teachers must often be guided in making the connections between what they may perceive as unrelated coursework (Hoffman, 1988). This conscious contextualization of musical and pedagogical knowledge and skill is vital in developing pedagogical content knowledge (Stauffer, 2005).

An approach based on the acquisition and development of *Pedagogical Content Knowledge* would also provide a useful framework for in-service teacher training and graduate-level work in music education. Monet (2006) presents research that suggests in-service teacher development is best approached through recognition not of the content itself, but on how that content is best presented to students. Anecdotal evidence suggests that while music teachers may desire the acquisition of additional musical content during graduate study, they most often seek the skills to become better communicators of the musical concepts and skills their students require.

<div align="center">Pedagogical Content Knowledge and Teacher Self-Efficacy</div>

Research indicates that teacher feelings of self-efficacy are directly related to their ability to utilize *Pedagogical Content Knowledge* and may be a key to promoting longevity in the careers of teachers (Lockman, 2006). If fostering a high level of *Pedagogical Content Knowledge* can help keep experienced teachers in the classroom by promoting greater feelings of self-efficacy, then it is important that these skills are developed as much as possible before teachers enter the field and that this skill is reinforced and developed as teachers move through their induction years. Teachers who see their effectiveness through their students' success are more likely to remain in the profession.

Keeping experienced teachers in music classrooms based on the development of *Pedagogical Content Knowledge* is a valid approach. From the design of the Schulman model, high levels of proficiency in *Pedagogical Content Knowledge* indicate that the teacher has well-developed proficiency in *Content Knowledge*,

General Pedagogical Knowledge, *Knowledge of Learners and Their Characteristics*, and *Curriculum Knowledge*. As teachers integrate these skills and are able to relate musical concepts to their students, they become more effective teachers, and their feelings of self-worth are boosted; these teachers tend to persist in the profession (Lockman, 2006).

Understanding of Pedagogical Content Knowledge in Music Teaching

Pedagogical Content Knowledge has been defined as "subject-specific pedagogical knowledge that enables teachers to present subject matter in a way that is accessible to learners" (Darling-Hammond, 2006, 81-82). There is an acknowledged need to scientifically define this skill (Holder, 2004; Veal and MaKinster, 1999). This need for clarity extends to the music education profession. The results of this study show that practitioners value the skill, but a definition of how *Pedagogical Content Knowledge* is utilized in the classroom is necessary if this skill is to be promoted as a means towards effective teaching. By adapting the questions presented by Manizade (2006) to a music perspective, we could ask:

- What are our subject-specific difficulties and common misconceptions?

- What are some useful representations of musical content and concepts?

- What are the common stages of musical development?

- What are the major underlying concepts in music, and how can we make connections between these concepts and with our students?

Answering questions such as these helps scientifically definite *Pedagogical Content Knowledge* in music education and helps flesh out just what this combination of knowledge and skills means to the successful teacher.

Specific ideas, constructs, and skills in music education should be investigated from a *Pedagogical Content Knowledge* perspective as concepts like "density" have been investigated by science teachers (Dawkins, Dickerson, and Butler, 2003) or "evolution" has been researched by biology and geology teachers (Veal and Kubasko, 2003) or various math concepts (Fuller, 1996). Common misconceptions students have about these concepts as well as useful representations and approaches that help students grasp these concepts are investigated in these studies.

Such an investigation into musical concepts viewed from this perspective could not possibly uncover all the ways to approach a given musical topic – imagine the controversy in producing a list that purports to give every representation and misconception related to forming a flute embouchure. By learning more about the nature of useful representations, how teachers develop and implement these representations, and the common misconceptions that students have about these topics, insight may be gained into the process of developing and utilizing *Pedagogical Content Knowledge* in the classroom. Examining how expert teachers combine their *Content Knowledge, General Pedagogical Knowledge, Knowledge of Learners,* and *Curriculum Knowledge* in order to relate musical concepts to their students will shed light upon how these successful teachers connect with their students.

Recommendations for Further Research

Replication of the Current Study

The significant interactions observed in the current study should be identified either as anomalies or as genuine trends that should be investigated further. A replication of this study using homogeneous samples of choir teachers, orchestra teachers, or elementary teachers is recommended. Some of the questions that merit further investigation include:

- Are there regional differences in the way characteristic tone and technique are valued or approached across the United States?

- In what ways are the skills in the *General Pedagogical Knowledge* category utilized differently by orchestra versus band instructors?

- Are there significant regional differences in that way technology is used in the instrumental music classroom across the United States?

- What factors influence these differences?

The statistical differences in rankings that were practically insignificant in this study may indicate trends based on membership in various sub-groups; a thorough investigation of these trends may reveal more substantial differences.

Future studies could also benefit from using additional techniques for sampling the subjective value of the items under investigation. The Likert-type ratings of items has been used frequently in the past, but this type of scale fails to reflect the relative importance of items effectively because practitioners generally rate all items as at least "moderately important" (Colwell, 1985). Participants in the current study, although ranking items with remarkable consistency, felt that the task

of sorting these items produced an artificial hierarchy of importance. Many of the respondents wanted to emphasize that items they ranked at the bottom of their lists were not unimportant.

Different preference-sampling techniques should be investigated to measure the subjective opinions of music educators with respect to the knowledge and skills they feel are necessary in the execution of their jobs. Different preference-sorting techniques along with qualitative interviews and long-term observations of practicing teachers might be excellent methods for collecting such data.

Investigate the Impact of Induction and Mentoring Programs

The value of induction and mentoring programs is well documented (Conway, Krueger, Robinson, Haack & Smith, 2002; Conway & Zerman, 2003; Haack, 2003; Krueger, 2001; Pontic, Keating & Wilcox, 2003). An investigation into how the development of *Pedagogical Content Knowledge* is fostered in mentoring relationships would be valuable. Is development of *Pedagogical Content Knowledge* a highly-valued aspect of the mentor-protégé relationship or perhaps an important by-product?

Individual items within the *Administrative Knowledge* and *Knowledge of Educational Contexts* were not included in this study. Even though survey respondents rated these two areas as the two least-important categories, they are not to be viewed as unimportant, and an investigation into the rankings of items within these two categories is recommended.

Development of Pedagogical Content Knowledge in Music-Teacher Education

Previous studies have investigated the development of *Pedagogical Content Knowledge* in teacher education (e.g., Chen, 2004; Van Der Valk & Broekman, 1999), but more research is needed in this area especially as it relates to music teacher education (Conkling, 2007). One application of the current research would be to study model music-teacher education programs to see how the seven Schulman areas are brought together in meaningful ways for students and how development in each area is accomplished.

An investigation into the implications of this model to teaching at the college level would be a valuable contribution to the music-teacher education literature. The ways in which the seven-area model is utilized by music-education faculty is of particular interest (Major & Palmer, 2006; Wanko, 2000). In addition to the findings of increased self-efficacy in public school teachers, some research suggests that strong *Pedagogical Content Knowledge* skills in college faculty members correlate with interest in improving their own teaching through research (Relmer, 2000).

<div align="center">Summary</div>

Music teachers across the United States value *Pedagogical Content Knowledge*, *Content Knowledge*, and *General Pedagogical Knowledge* as three of the most important areas that contribute to teacher success. The other broad areas, *Knowledge of Learners and Their Characteristics, Curriculum Knowledge, Knowledge of Educational Contexts,* and *Administrative Knowledge* are each important and serve as important contributors to success, but the top three areas dominate the rankings consistently across a wide variety of variables.

Individual rankings of skills within each of these categories were affected by various demographic variables, but overall teachers ranked items with each of the areas with striking consistency. Not surprisingly, teachers ranked practical application of musical and technical knowledge at the top of each list. While each of the skills was deemed at least "moderately" or "occasionally" important, skills that connect with the direct success of music students in the classroom rated highest on most ranking scales.

The rankings of the overall categories, most notably the consistently high ranking of *Pedagogical Content Knowledge*, reinforce the notion that successful band and orchestra teaching involves more than just a teacher's mastery of music content, performance expertise, and teaching know-how. Effective music teachers combine their pedagogy skills and musical knowledge in a specific way that allows them to connect with their students. This survey of band and orchestra directors reveals what practitioners feel are the fundamental knowledge and skills instrumental teachers should possess in the areas of content knowledge, pedagogical skills, administrative skills, curriculum, knowledge of students, environmental concerns, and the all-important combination of these skills that goes into effective teaching. The Schulman (1986, 1987) framework recognizes that these knowledge and skills are used in a very special way in the classroom, and the acquisition of the basic musical and pedagogical skills is only complete when they are combined in the special way that allows music teachers to effectively communicate musical concepts to their students.

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APPENDIX A – MUSIC EDUCATION FACULTY INVITATION

Dear [Faculty Member's Name],

I am a graduate student under the direction of Dr. Nancy Barry and Dr. Mike Raiber in the Music Education Department at The University of Oklahoma-Norman Campus. I invite you to participate in a research study being conducted under the auspices of the University of Oklahoma-Norman Campus, entitled *Secondary Instrumental Music Teachers' Evaluation of Essential Knowledge and Skills for Successful Teaching* (IRB # [ ]. The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to their professional success.

Your participation will involve filling out an online questionnaire asking you to rank the relative importance of 88 representative skills that have been identified in the related literature as being important contributors to instrumental music teachers' success. Completing the survey should take you approximately 25 to 30 minutes.

Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time. Your refusal to participate or to continue to participate will not result in a penalty or loss of benefits. This questionnaire is anonymous. The results of our study may be published, but your name will not be linked to responses in publications that are released from the project. In fact, the published results will be presented in summary form only. All information you provide will remain strictly confidential.

The findings from this project will provide information on the views of practicing music teachers in relationship to the established body of literature on music teacher skills and will have implications for music teacher education and in-service teacher training. There is no cost to you other than the time it takes to complete the survey.

If you have any questions about this research project, please feel free to call or e-mail me, Dr. Nancy Barry or Dr. Mike Raiber; our contact information is listed below. Questions about your rights as a research participant or concerns about the project should be directed to the Institutional Review Board at The University of Oklahoma-Norman Campus at (405) 325-8110 or irb@ou.edu

By clicking on the survey link below, you will be agreeing to participate in the above described project.

Thanks for your consideration!

Sincerely,

Si Millican, principal investigator
smillican@ou.edu
(405) 366-6252

Dr. Nancy Barry, faculty advisor
barrynh@ou.edu
(405) 325-4146

Dr. Mike Raiber, faculty advisor
raiberma@ou.edu
(405) 325-3323

APPENDIX B – INSTRUMENT VERIFICATION INFORMED CONSENT

Dear [Faculty Member's Name]!

I am a graduate student under the direction of Dr. Nancy Barry and Dr. Mike Raiber in the Music Education Department at The University of Oklahoma-Norman Campus. I invite you to participate in a research study being conducted under the auspices of the University of Oklahoma-Norman Campus, entitled *Secondary Instrumental Music Teachers' Evaluation of Essential Knowledge and Skills for Successful Teaching* (IRB # [ ]. The purpose of this study is to investigate the perceptions of secondary instrumental music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to their professional success.

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Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time. Your refusal to participate or to continue to participate will not result in a penalty or loss of benefits. This questionnaire is anonymous. The results of our study may be published, but your name will not be linked to responses in publications that are released from the project. In fact, the published results will be presented in summary form only. All information you provide will remain strictly confidential.

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By clicking on the survey link below, you will be agreeing to participate in the above described project.

Thanks for your consideration!

 [HTML Survey Link] Click here to continue! [HTML Survey Link]

APPENDIX C – MUSIC EDUCATION FACULTY QUESTIONNAIRE

Instructions: On the following pages, you will find statements drawn from the professional literature regarding the most important knowledge and skills necessary for success in the secondary instrumental music classroom. Each of these skills has been listed (by someone) as at least "moderately important." Your task in this activity is to list the *relative* importance of each statement in relationship to the other tasks. You may find it helpful to browse the first page of statements before beginning your work.

For each of the statements on the following pages, select a number between one (least important) and five (most important) that best represents your opinion of the relative importance of each skill for secondary instrumental teachers in the public schools. Please consider your primary teaching emphasis (band or orchestra) when answering these questions.

1	Develop relationships with colleagues and administrators including building staff, coaches, other music staff members, etc.	1 2 3 4 5
2	Form supportive and constructive relationships with students	1 2 3 4 5
3	Have an understanding of the basic physical requirements that promote success on individual instruments	1 2 3 4 5
4	Demonstrate a broad knowledge of Western art music including recognizing major periods in music, performance practice, composers, conductors, and styles	1 2 3 4 5
5	Demonstrate the ability to write an effective lesson plan that includes a measurable objective, effective assessment, and a logical sequence of activities	1 2 3 4 5
6	Demonstrate specific methods for developing individual and ensemble technical facility	1 2 3 4 5
7	Use classroom and rehearsal management techniques to promote student learning	1 2 3 4 5
8	Utilize methods to teach students to improvise in stylistically appropriate ways	1 2 3 4 5
9	Establish and maintain group motivation and interest	1 2 3 4 5
10	Be aware of specific methods and materials suitable for teaching general music, fine arts, or other humanities classes	1 2 3 4 5
11	Demonstrate knowledge of strategies for teaching homogeneous or heterogeneous classes	1 2 3 4 5
12	Demonstrate strong sight-reading ability	1 2 3 4 5
13	Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments	1 2 3 4 5
14	Demonstrate knowledge of the particular needs of specific student populations (exceptional learners, English-language learners, advanced students, students who need more help, etc.)	1 2 3 4 5
15	Demonstrate financial management skills including development of a budget, administering and tracking purchases, organizing fundraising activities, accounting for school-owned instruments and equipment, etc	1 2 3 4 5
16	Assess the effectiveness of one's own rehearsal methods	1 2 3 4 5
17	Model characteristic tone production on at least one brass, woodwind, string, and percussion instrument	1 2 3 4 5
18	Demonstrate knowledge of world and ethnic music instruments and performance practice	1 2 3 4 5

19	Recognize and adapt presentation of material to assist students with various learning styles (visual, auditory, kinesthetic)	1 2 3 4 5
20	Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.	1 2 3 4 5
21	Be familiar with specific methods for teaching beginning-level classes	1 2 3 4 5
22	Develop guidelines to ensure year round development of individual and ensemble skills	1 2 3 4 5
23	Demonstrate an understanding of students' families, culture, and communities as a basis for connecting instruction to students' experiences	1 2 3 4 5
24	Demonstrate an ability to organize and execute student trips, travel, and lodging including athletic performances, contests, parades, tours, etc.	1 2 3 4 5
25	Be knowledgeable of professional journals, texts, reference works, and organizations	1 2 3 4 5
26	Organize the logistics of concerts and performances (programs, ushers, scheduling, facilities, etc.)	1 2 3 4 5
27	Be familiar with methods and philosophies of scheduling music classes	1 2 3 4 5
28	Assess of musical aptitude (potential) for instrument selection purposes	1 2 3 4 5
29	Develop valid, reliable, and useful auditions and assessments	1 2 3 4 5
30	Gather, store, and manipulate student information and attendance	1 2 3 4 5
31	Be familiar with a core repertoire of method books and materials for band and/or orchestra	1 2 3 4 5
32	Be aware of the effects of range and its relationship to developmental level	1 2 3 4 5
33	Demonstrate an ability to prescribe solutions for common performance problems (using too much pressure, rushing, etc.)	1 2 3 4 5
34	Be familiar with activities and requirements dealing with the hiring of instructional staff, private lesson teachers, and consultants	1 2 3 4 5
35	Organize a personal and professional calendar	1 2 3 4 5
36	Demonstrate an ability to identify musical concepts that could be taught within a musical work	1 2 3 4 5
37	Demonstrate fundamental aural skills (identification of intervals, chords, and rhythms; the ability to play simple melodies by ear).	1 2 3 4 5
38	Be aware of a core repertoire of solo, small ensemble (chamber), and large ensemble (band and/or orchestra) works	1 2 3 4 5

		Least <-- ----> Most Important
39	Demonstrate effective delivery skills including the effective use of voice, body, face, and space	1 2 3 4 5
40	Demonstrate a familiarity with specific elementary schools of technique such as Orff, Kodaly, etc.	1 2 3 4 5
41	Understand the idiomatic uses of harmony, rhythm, scale types, articulation, etc. in Jazz and popular music	1 2 3 4 5
42	Conduct and rehearse musical theatre productions	1 2 3 4 5
43	Demonstrate specific methods for teaching sight reading	1 2 3 4 5
44	Analyze the elements of compositional organization in a piece (pitch, scale types, harmony, rhythm, texture, form, timbre, etc.)	1 2 3 4 5
45	Be aware of methods and materials suitable for teaching music theory (aural skills, ear training, analysis, form, etc.)	1 2 3 4 5
46	Provide a rationale for band/orchestra classes	1 2 3 4 5
47	Detect technical errors in ensemble performance.	1 2 3 4 5
48	Possess knowledge of visual marching band fundamentals (stride, carriage, etc.)	1 2 3 4 5
49	Demonstrate an ability to monitor students' progress and change instruction to meet individual and group needs	1 2 3 4 5
50	Demonstrate a knowledge of federal and state laws that impact instruction (exceptional learners, student privacy, employment, etc.)	1 2 3 4 5
51	Demonstrate physical conducting skills sufficient to lead an ensemble in effective rehearsals and performances.	1 2 3 4 5
52	Justify purchases and expenditures to parents	1 2 3 4 5
53	Show relationships between music and non music subjects in meaningful ways	1 2 3 4 5
54	Demonstrate promotional and publicity skills	1 2 3 4 5
55	Organize and schedule recruiting materials and activities	1 2 3 4 5
56	Demonstrate characteristic tone and technique on their primary instrument	1 2 3 4 5
57	Understand how most people learn most efficiently	1 2 3 4 5
58	Demonstrate knowledge of specific warm up routines and exercises	1 2 3 4 5
59	Justify purchases and expenditures to administrators	1 2 3 4 5
60	Demonstrate a professional level of written and oral communication skills (grammar, punctuation, spelling, etc.)	1 2 3 4 5
61	Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding	1 2 3 4 5

Least <-- ----> Most
Important

62	Know how to acquire a knowledge of campus, district, and special contest policies and procedures (attendance reporting, grading, budget, finance, contest entry procedures)	1 2 3 4 5
63	Rehearse a Jazz ensemble	1 2 3 4 5
64	Be aware of the social and physical characteristics specific to middle-school and/or high-school students	1 2 3 4 5
65	Demonstrate knowledge of specific methods and techniques that facilitate students' abilities to read and write musical notation	1 2 3 4 5
66	Use instructional technology in rehearsal (i.e. tuner, metronome, computer software, recording equipment, etc.).	1 2 3 4 5
67	Use specific methods for teaching marching band	1 2 3 4 5
68	Be familiar with choral teaching methods	1 2 3 4 5
69	Analyze a score to determine the appropriate difficulty level, anticipate problems spots and technical challenges, and to identify rehearsal techniques that would assist students in meeting the performance challenges.	1 2 3 4 5
70	Integrate instruction in music with other arts and with subjects outside the arts.	1 2 3 4 5
71	Implement a philosophy of music education within the context of a community/school	1 2 3 4 5
72	Understand marching band show planning and concept development	1 2 3 4 5
73	Be aware of ways of establishing rapport, developing relationships with, and recognizing the concerns of parents, families, booster groups, music retail dealers, civic leaders, and other members of the community	1 2 3 4 5
74	Demonstrate knowledge of specific methods and techniques that facilitate students' abilities to perform with a steady pulse and accurate rhythm	1 2 3 4 5
75	Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure	1 2 3 4 5
76	Establish and maintain individual student motivation and interest	1 2 3 4 5
77	Know the fundamentals characteristics of the instruments they teach (common fingerings, ranges, pitch tendencies, transpositions, sound production techniques, fundamental posture and grip, care, maintenance, minor repair, and high-quality brands/models of beginner equipment and supplies).	1 2 3 4 5

		Least <-- ----> Most Important
78	Use specific strategies for the use of technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)	1 2 3 4 5
79	Use specific methods to teach balance, blend, and intonation	1 2 3 4 5
80	Demonstrate knowledge of specific methods for teaching musical phrasing	1 2 3 4 5
81	Be familiar with organizing booster groups	1 2 3 4 5
82	Use a hierarchy to diagnose ensemble errors	1 2 3 4 5
83	Demonstrate piano performance skills adequate to analyze works and accompany music for the teaching level	1 2 3 4 5
84	Arrange, re-write, or simplify a piece for a given ensemble	1 2 3 4 5
85	Communicate expectations and requirements to students	1 2 3 4 5
86	Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction	1 2 3 4 5
87	Demonstrate an ability to communicate expectations and requirements to parents	1 2 3 4 5
88	Demonstrate an ability and willingness to assess classroom procedures	1 2 3 4 5

If you feel there are additional knowledge or skill areas that should be included in this survey, please list them in the space below:

Please list any questions, comments, or concerns you have in the space below:

☐ Check here if you would like to receive a summary of the final research project results:

Thank you for your time and expertise; please contact us if you would like additional information.

Si Millican, principal investigator
smillican@ou.edu
(405) 366-6252

Dr. Nancy Barry, faculty advisor
barrynh@ou.edu
(405) 325-4146

Mike Raiber, faculty advisor
raiberma@ou.edu
(405) 352-3323

APPENDIX D – PILOT STUDY INVITATION

Dear [Name of Secondary Instrumental Music Teacher],

I am a former band director from your region in Texas working to complete a research project at The University of Oklahoma-Norman Campus. The purpose of this study is to investigate the perceptions of secondary instrumental music teachers like you regarding the importance of certain knowledge and skills that may be essential to your success as a band or orchestra teacher.

The following information is designed to help you decide if you would be willing and able to help with this project. Please read over it carefully, and if you have any questions or concerns, feel free to contact the research team or the university at the email or phone numbers listed below.

I know your time is valuable, and I thank you for your kind consideration.

University of Oklahoma
Institutional Review Board
Informed Consent to Participate in a Research Study

Project Title: Central Texas instrumental music teachers' evaluation of essential knowledge and skills for successful teaching.

Principal Investigator: Si Millican

Department: Music

You are being asked to volunteer for this research study. This study is being conducted at The University of Oklahoma, Norman Campus. You were selected as a possible participant because you are a secondary band or orchestra teacher in a public school.

Please read this form and ask any questions that you may have before agreeing to take part in this study.

PURPOSE OF THE RESEARCH STUDY

The purpose of this study is to investigate the perceptions of music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to their professional success.

NUMBER OF PARTICIPANTS

About 230 people will take part in this study.

PROCEDURES

If you agree to be in this study, you will be asked to do the following:

1) Rank the importance of 62 skills from most important to least important in five teaching categories,
2) Choose the more important skill in 21 pairs of statements,
3) Provide anonymous information related to
   a. subjects taught,
   b. grade level assignments,
   c. school size,
   d. instructional staff size,
   e. primary performance instrument,
   f. number of years teaching experience,

     g. college attended, and
     h. amount of public school observation and teaching in college before student teaching.

No personally-identifiable information will be collected.

LENGTH OF PARTICIPATION

Completing the survey should take you approximately 15 to 20 minutes.

THIS STUDY HAS THE FOLLOWING RISKS:

No foreseeable risk, beyond those present in normal daily life, are anticipated in this study.

BENEFITS OF BEING IN THE STUDY ARE

None

CONFIDENTIALITY.

In published reports, there will be no information included that will make it possible to identify you without your permission. Research records will be stored securely and only approved researchers will have access to the records.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organizations include the OU Institutional Review Board.

COSTS

There is no cost for participation

COMPENSATION

No Compensation.

RIGHTS

Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You can discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

VOLUNTARY NATURE OF THE STUDY

Participation in this study is voluntary. If you decline to participate, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

WAIVERS OF ELEMENTS OF CONFIDENTIALITY

Your name will not be linked with your responses.

CONTACTS AND QUESTIONS

If the participant has concerns or complaints about the research, the researcher(s) conducting this study can be contacted at

Si Millican, principal investigator
smillican@ou.edu
(405) 366-6252

Dr. Nancy Barry, faculty advisor
barrynh@ou.edu
(405) 325-4146

Dr. Mike Raiber, faculty advisor
raiberma@ou.edu
(405) 325-3323

Contact the researchers if you have questions or if you have experienced a research-related injury.

If you have any questions, concerns, or complaints about the research and wish to talk to someone other than individuals on the research team or if you cannot reach the research team, you may contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu.

STATEMENT OF CONSENT

After reviewing the statements above, please click on of the buttons below indicating your decision to participate in the survey:

<HTML button> No, I do not wish to participate (If they click on this button, then it takes them to a "Thank you for your time")

<HTML button> Yes, I do wish to participate (It takes them to the survey)

APPENDIX E – PILOT STUDY QUESTIONNAIRE

Thank you for your willingness to participate in this brief survey about effective teaching in band and orchestra.

The following survey consists of 41 questions divided into three sections. The first section asks a few brief questions about your teaching assignment and experience. Remember that all answers are confidential, and your personal information cannot be linked to your responses in any way.

Thanks again for your help!

1. Which of the following subjects do you teach (select all that apply)?

☐ Band
☐ Choir
☐ Humanities
☐ Jazz Ensemble
☐ Marching Band
☐ Music Appreciation
☐ Music History
☐ Music Theory
☐ Orchestra
☐ Other (please specify)

2. Which of the following grades do you teach (select all that apply)?

☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
☐ 11
☐ 12

3. What is the approximate total student enrollment of your school?

○ Fewer than 250 students
○ 251 – 500 students
○ 501 – 750 students
○ 751 – 1000 students
○ 1001 – 1250 students
○ 1251 – 1500 students
○ 1501 – 1750 students
○ 1751 – 2000 students
○ More than 2000 students

4. Including yourself, how many full-time band or orchestra teachers are assigned to your primary campus?

○ 1 (just me!)
○ 2
○ 3
○ 4
○ 5 or more

5. What is your primary performance instrument? (select ONE)

○ Flute
○ Oboe
○ Bassoon
○ Clarinet
○ Saxophone
○ Trumpet
○ French Horn
○ Trombone
○ Baritone/Euphonium
○ Tuba
○ Percussion
○ Violin
○ Viola
○ Cello
○ Bass
○ Other (please specify below)

6. Including this year, how many years have you been teaching band and/or orchestra?

○ This is my first year teaching band and/or orchestra
○ 2-3 years
○ 4-5 years
○ 6-10 years
○ 11-15 years
○ 16-20 years
○ 20-25 years
○ 26-30 years
○ More than 30 years

----

7. Please enter the first THREE digits of your school's ZIP code.

8. Please list the college(s) from which you graduated in the area(s) below:

Institution name	Institution name	Institution name
Location (City, State)	Location (City, State)	Location (City, State)
Degree Earned (BM, BME, etc.)	Degree Earned (BM, BME, etc.)	Degree Earned (BM, BME, etc.)

11. In your undergraduate program, approximately how many hours of formal public school observation or teaching did you complete BEFORE student teaching?

- ○ 10 hours or fewer
- ○ 11 – 20 hours
- ○ 21 – 30 hours
- ○ 31 – 40 hours
- ○ 41 – 50 hours
- ○ 51 – 60 hours
- ○ 61 – 70 hours
- ○ More than 70 hours
- ○ Don't know or can't remember

Thank you for the information!

In the second part of this survey, you will be presented with eight short lists of skills. Please rank the skills from MOST important to LEAST important within each list.

12. Please rank the importance of the following skills from 1 (MOST important) to 7 (LEAST important).

	Prescribe solutions for common performance problems (using too much pressure, rushing, etc.)
	Analyze a score to determine the difficulty level, possible problem spots and technical challenges
	Develop valid, reliable, and useful auditions and tests
	Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction
	Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding
	Monitor students' progress and change instruction to meet individual and group needs
	Assess the effectiveness of one's own rehearsal methods

13. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Conduct well enough to lead an ensemble in effective rehearsals and performances.
	Demonstrate strong sight-reading ability
	Demonstrate characteristic tone and technique on primary instrument
	Possess piano performance skills adequate to analyze works and accompany music for current teaching level
	Model characteristic tone production on secondary instrument(s)

14. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Demonstrate knowledge of the particular needs of specific student populations (exceptional learners, English language learners, advanced students, students who need more help, etc.)
	Be aware of the social and physical characteristics specific to middle-school and/or high-school students
	Recognize and adapt presentation of material to assist students with various learning styles (visual, auditory, kinesthetic)
	Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments
	Establish and maintain individual student motivation

15. Please rank the importance of the following skills from 1 (MOST important) to 6 (LEAST important).

	Possess broad knowledge of Western art music including recognizing major periods in music, performance practice, composers, conductors, and styles
	Know federal and state laws that impact instruction (exceptional learners, student privacy, employment, etc.)
	Possess knowledge of world and ethnic music
	Integrate instruction in music with other arts and with subjects outside the arts
	Know the fundamental characteristics of instruments they teach (common fingerings, ranges, pitch tendancies, sound production, posture, grip, care, maintenance, minor repair, and high quality brands/models of equipment and supplies)
	Understand basic physical requirements that promote success on individual instruments

16. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Analyze the elements of compositional organization in a piece (pitch, scale types, harmony, rhythm, texture, form, timbre, etc.)
	Possess fundamental aural skills (identification of intervals, chords, and rhythms; the ability to play simple melodies by ear).
	Detect technical errors in ensemble performances
	Arrange, re-write, or simplify a piece of music
	Be familiar with professional journals, organizations, texts, and reference materials

17. Please rank the importance of the following skills from 1 (MOST important) to 6 (LEAST important).

	Possess a professional level of written and oral communication skills (grammar, punctuation, spelling, etc.)
	Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.
	Demonstrate an ability and willingness to assess classroom procedures
	Manage classroom behavior
	Understand how most people learn most efficiently
	Effectively communicate with students through appropriate use of voice, body, face, and space

18. Please rank the importance of the following skills from 1 (MOST important) to 8(LEAST important).

	Know specific ways to teach musical phrasing
	Know specific warm up routines and exercises
	Know specific ways to teach students to improvise
	Develop yearly plans to ensure development of individual and ensemble skills
	Know specific ways of teaching technical facility
	Know specific methods to teach students to read and write musical notation
	Know specific ways of teaching steady pulse and accurate rhythm
	Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure

19. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Be familiar with specific techniques for teaching beginning-level classes
	Identify musical concepts that could be taught within a musical work
	Be familiar with a core repertoire of method books and materials for band and/or orchestra
	Know how to use technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)
	Be familiar with a core repertoire of solo, small ensemble (chamber), and large ensemble (full band and/or orchestra) works

In the final section of this survey, you will be presented pairs of skills that instrumental music teachers might find important.

Please choose one of the skills that you feel is MORE important than the other.

Each pair of skills is presented for your choice, and a brief definition of the skills is included below the pair for your reference.

20. Which of the following two skills is MORE important in your daily teaching activities?
- ○ Musical knowledge and skills --or--
- ○ Sequencing/curriculum knowledge

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

21. Which of the following two skills is MORE important in your daily teaching activities?

○ Knowldge of learners --or--
○ General teaching skills

Knowldge of learners = An awareness of the social, physical, and psychological development levels of students and how these influence teaching.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

22. Which of the following two skills is MORE important in your daily teaching activities?

○ Administrative skills --or--
○ Knowledge of learners

Administrative skills = management of financial, travel, inventory, and student information.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

23. Which of the following two skills is MORE important in your daily teaching activities

○ Musical knowledge and skills --or--
○ Administrative skills

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills

Administrative skills = management of financial, travel, inventory, and student information.

24. –

○ Sequencing and curriclum skills -- or--
○ Relating musical concepts to learners

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

25. Which of the following two skills is MORE important in your daily teaching activities?
- ○ Sequencing and curriculum skills --or--
- ○ School environment knowledge

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

26. -
- ○ Musical knowledge and skills --or--
- ○ Genearal teaching skills

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

27. Which of the following two skills is MORE important in your daily teaching activities?
- ○ Sequencing and curriculum skills --or--
- ○ Knowledge of learners

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

28. -
- ○ General teaching skills --or--
- ○ School environment knowledge

General teaching skills = classroom management, establishment of routines, communication skills, etc.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

29. Which of the following two skills is MORE important in your daily teaching activities?

○ Relating musical concepts to learners --or--
○ School environment knowledge

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

30. -

○ Knowledge of learners --or--
○ School environment knowledge

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

31. Which of the following two skills is MORE important in your daily teaching activities?

○ Administrative skills --or-
○ General teaching skills

Administrative skills = management of financial, travel, inventory, and student information.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

32. -

○ Sequencing and curriculum skills --or--
○ General teaching skills

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

33. Which of the following two skills is MORE important in your daily teaching activities?

   ○   Administrative skills --or--

   ○   School environment knowledge

Administrative skills = management of financial, travel, inventory, and student information.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

34. -

   ○   Musical knowledge and skills --or--

   ○   Knowledge of learners

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

35. Which of the following two skills is MORE important in your daily teaching activities?

   ○   Administrative skills --or--

   ○   Sequencing and curriculum skills

Administrative skills = management of financial, travel, inventory, and student information.

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

36. -

   ○   General teaching skills --or--

   ○   Relating musical concepts to learners

General teaching skills = classroom management, establishment of routines, communication skills, etc.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

37. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Musical knowledge and skills --or--
- ○ School environment knowledge

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

38. -

- ○ Administrative skills --or---
- ○ Relating musical concepts to learners

Administrative skills = management of financial, travel, inventory, and student information.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

39. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Musical knowledge and skills --or--
- ○ Relating musical concepts to learners

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

40. -

- ○ Knowledge of learners --or--
- ○ Relating musical concepts to learners

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

41. If you feel there are additional knowledge or skill areas that should be included in this survey, please list them in the space below:

42. Please list any questions, comments, or concerns you have in the space below:

Thank you so much for taking the time to provide your opinions and recommendations. If you have any questions, or if you would like to receive a copy of a summary of the final results of the research study, please send a separate email to the primary researcher at smillican@ou.edu.

APPENDIX F – MAIN STUDY INVITATION

Dear [name of instrumental music teacher],

I am a former band director from Texas working to complete a research project at The University of Oklahoma-Norman Campus. The purpose of this study is to investigate the perceptions of band and orchestra teachers like you regarding the importance of certain knowledge and skills that may be essential to your success as a music teacher.

The following information is designed to help you decide if you would be willing and able to help with this project. Please read over it carefully, and if you have any questions or concerns, feel free to contact the research team or the university at the email or phone numbers listed below.

I know your time is valuable, and I thank you for your kind consideration.

Please paste the following link into your web browser to participate --
http://www.surveymonkey.com/s.asp?u=153143734802

University of Oklahoma
Institutional Review Board
Informed Consent to Participate in a Research Study

Project Title:	Instrumental music teachers' evaluation of essential knowledge and skills for successful teaching.
Principal Investigator:	Si Millican
Department:	Music

You are being asked to volunteer for this research study. This study is being conducted at The University of Oklahoma, Norman Campus. You were selected as a possible participant because you are a secondary band or orchestra teacher in a public school.

Please read this form and ask any questions that you may have before agreeing to take part in this study.

PURPOSE OF THE RESEARCH STUDY

The purpose of this study is to investigate the perceptions of music teachers regarding the importance of certain knowledge and skills identified in research literature as being essential to their professional success.

NUMBER OF PARTICIPANTS

About 1,000 people will take part in this study.

PROCEDURES

If you agree to be in this study, you will be asked to do the following:

1) Rank the importance of 53 skills from most important to least important in five teaching categories,
2) Choose the more important skill in 21 pairs of statements,

3) Provide anonymous information related to
- i. subjects taught,
- j. grade level assignments,
- k. school size,
- l. instructional staff size,
- m. primary performance instrument,
- n. number of years teaching experience,
- o. the state in which you are currently teaching,
- p. college attended, and
- q. amount of public school observation and teaching in college before student teaching.

No personally-identifiable information will be collected.

LENGTH OF PARTICIPATION

Completing the survey should take you approximately 15 to 20 minutes.

THIS STUDY HAS THE FOLLOWING RISKS:

No foreseeable risk, beyond those present in normal daily life, are anticipated in this study.

BENEFITS OF BEING IN THE STUDY ARE

None

CONFIDENTIALITY.

In published reports, there will be no information included that will make it possible to identify you without your permission. Research records will be stored securely and only approved researchers will have access to the records.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organizations include the OU Institutional Review Board.

COSTS

There is no cost for participation

COMPENSATION

No Compensation.

RIGHTS

Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You can discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

VOLUNTARY NATURE OF THE STUDY

Participation in this study is voluntary. If you decline to participate, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

WAIVERS OF ELEMENTS OF CONFIDENTIALITY

Your name will not be linked with your responses.

CONTACTS AND QUESTIONS

If the participant has concerns or complaints about the research, the researcher(s) conducting this study can be contacted at

Si Millican, principal investigator
smillican@ou.edu
(405) 366-6252

Dr. Nancy Barry, faculty advisor
barrynh@ou.edu
(405) 325-4146

Dr. Mike Raiber, faculty advisor
raiberma@ou.edu
(405) 325-3323

Contact the researchers if you have questions or if you have experienced a research-related injury.

If you have any questions, concerns, or complaints about the research and wish to talk to someone other than individuals on the research team or if you cannot reach the research team, you may contact the University of Oklahoma – Norman

Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or
irb@ou.edu.

STATEMENT OF CONSENT

After reviewing the statements above, please click on one of the links below
indicating your decision to participate in the survey:

Please paste the following link into your web browser to participate --
http://www.surveymonkey.com/s.asp?u=153143734802

Thank you for your time and consideration!

APPENDIX G – MAIN STUDY QUESTIONNAIRE

Thank you for your willingness to participate in this brief survey about effective teaching in band and orchestra.

The following survey consists of 41 questions divided into three sections. The first section asks a few brief questions about your teaching assignment and experience. Remember that all answers are confidential, and your personal information cannot be linked to your responses in any way.

Thanks again for your help!

1. Which of the following subjects do you teach (select all that apply)?

- ☐ Band
- ☐ Orchestra
- ☐ Choir
- ☐ Other Music Class
- ☐ Other Non-Music Class

2. Which of the following grades do you teach (select all that apply)?

- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 11
- ☐ 12

3. What is the approximate total student enrollment of your school?

- ○ Fewer than 250 students
- ○ 251 – 500 students
- ○ 501 – 750 students
- ○ 751 – 1000 students
- ○ 1001 – 1250 students
- ○ 1251 – 1500 students
- ○ 1501 – 1750 students
- ○ 1751 – 2000 students
- ○ More than 2000 students

4. Including yourself, how many full-time band or orchestra teachers are assigned to your primary campus?

- ○ 1 (just me!)
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more

5. What is your primary performance instrument? (select ONE)

- ○ Flute
- ○ Oboe
- ○ Bassoon
- ○ Clarinet
- ○ Saxophone
- ○ Trumpet
- ○ French Horn
- ○ Trombone
- ○ Baritone/Euphonium
- ○ Tuba
- ○ Percussion
- ○ Violin
- ○ Viola
- ○ Cello
- ○ Bass
- ○ Other (please specify below)

6. Including this year, how many years have you been teaching band and/or orchestra?

- ○ This is my first year teaching band and/or orchestra
- ○ 2-3 years
- ○ 4-5 years
- ○ 6-10 years
- ○ 11-15 years
- ○ 16-20 years
- ○ 20-25 years
- ○ 26-30 years
- ○ More than 30 years

7. Please enter the first THREE digits of your school's ZIP code.

8. Please list the college from which you received your first music degree in the area below:

Institution name:
Location (City, State):
Degree Earned (BM, BME, etc.):

9. In your undergraduate program, approximately how many hours of formal public school observation or teaching did you complete BEFORE student teaching?

- ○ 10 hours or fewer
- ○ 11 – 20 hours
- ○ 21 – 30 hours
- ○ 31 – 40 hours
- ○ 41 – 50 hours
- ○ 51 – 60 hours
- ○ 61 – 70 hours
- ○ More than 70 hours
- ○ Don't know or can't remember

Thank you for the information!

In the second part of this survey, you will be presented with eight short lists of skills. Please rank the skills from MOST important to LEAST important within each list.

10. Please rank the importance of the following skills from 1 (MOST important) to 7 (LEAST important).

	Prescribe solutions for common performance problems (using too much pressure, rushing, etc.)
	Analyze a score to determine the difficulty level, possible problems spots and technical challenges
	Develop valid, reliable, and useful auditions and tests
	Evaluate the effectiveness of printed method books and instructional materials for specific levels of instruction
	Use multiple examples and explanations of concepts that capture key ideas and link them to students' prior understanding
	Monitor students' progress and change instruction to meet individual and group needs
	Assess the effectiveness of one's own rehearsal methods

**11. Please rank the importance of the following skills from 1 (MOST important)
to 5 (LEAST important).**

	Conduct well enough to lead an ensemble in effective rehearsals and performances.
	Demonstrate strong sight-reading ability
	Demonstrate characteristic tone and technique on primary instrument
	Possess piano performance skills adequate to analyze works and accompany music for current teaching level
	Model characteristic tone production on secondary instrument(s)

12. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Demonstrate knowledge of the particular needs of specific student populations (exceptional learners, English language learners, advanced students, students who need more help, etc.)
	Be aware of the social and physical characteristics specific to middle-school and/or high-school students
	Recognize and adapt presentation of material to assist students with various learning styles (visual, auditory, kinesthetic)
	Evaluate physical and behavioral characteristics that contribute to successful selection of appropriate beginner instruments
	Establish and maintain individual student motivation

13. Please rank the importance of the following skills from 1 (MOST important) to 6 (LEAST important).

	Possess broad knowledge of Western art music including recognizing major periods in music, performance practice, composers, conductors, and styles
	Know federal and state laws that impact instruction (exceptional learners, student privacy, employment, etc.)
	Possess knowledge of world and ethnic music
	Integrate instruction in music with other arts and with subjects outside the arts
	Know the fundamental characteristics of instruments they teach (common fingerings, ranges, pitch tendencies, sound production, posture, grip, care, maintenance, minor repair, and high quality brands/models of equipment and supplies)
	Understand basic physical requirements that promote success on individual instruments

14. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Analyze the elements of compositional organization in a piece (pitch, scale types, harmony, rhythm, texture, form, timbre, etc.)
	Possess fundamental aural skills (identification of intervals, chords, and rhythms; the ability to play simple melodies by ear).
	Detect technical errors in ensemble performances
	Arrange, re-write, or simplify a piece of music
	Be familiar with professional journals, organizations, texts, and reference materials

15. Please rank the importance of the following skills from 1 (MOST important) to 6 (LEAST important).

	Possess a professional level of written and oral communication skills (grammar, punctuation, spelling, etc.)
	Establish orderly routines including daily routines, class procedures, rules, handbooks, etc.
	Demonstrate an ability and willingness to assess classroom procedures
	Manage classroom behavior
	Understand how most people learn most efficiently
	Effectively communicate with students through appropriate use of voice, body, face, and space

16. Please rank the importance of the following skills from 1 (MOST important) to 8(LEAST important).

	Know specific ways to teach musical phrasing
	Know specific warm up routines and exercises
	Know specific ways to teach students to improvise
	Develop yearly plans to ensure development of individual and ensemble skills
	Know specific ways of teaching technical facility
	Know specific methods to teach students to read and write musical notation
	Know specific ways of teaching steady pulse and accurate rhythm
	Use specific techniques to help develop a solid core sound among individual players and ensembles including posture, breath control, and embouchure

17. Please rank the importance of the following skills from 1 (MOST important) to 5 (LEAST important).

	Be familiar with specific techniques for teaching beginning-level classes
	Identify musical concepts that could be taught within a musical work
	Be familiar with a core repertoire of method books and materials for band and/or orchestra
	Know how to use technology in classroom instruction (accompaniment and tuning software, recording technology, etc.)
	Be familiar with a core repertoire of solo, small ensemble (chamber), and large ensemble (full band and/or orchestra) works

In the final section of this survey, you will be presented pairs of skills that instrumental music teachers might find important.

Please choose one of the skills that you feel is MORE important than the other.

Each pair of skills is presented for your choice, and a brief definition of the skills is included below the pair for your reference.

18. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Musical knowledge and skills --or--
- ○ Sequencing/curriculum knowledge

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

19. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Knowledge of learners --or--
- ○ ☐ General teaching skills

Knowledge of learners = An awareness of the social, physical, and psychological development levels of students and how these influence teaching.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

20. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Administrative skills --or--
- ○ Knowledge of learners

Administrative skills = management of financial, travel, inventory, and student information.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

21. Which of the following two skills is MORE important in your daily teaching activities

- ○ Musical knowledge and skills --or--
- ○ Administrative skills

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills

Administrative skills = management of financial, travel, inventory, and student information.

22. -

- ○ Sequencing and curriculum skills -- or--
- ○ Relating musical concepts to learners

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

23. Which of the following two skills is MORE important in your daily teaching activities?

- ○ Sequencing and curriculum skills --or--
- ○ School environment knowledge

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

24. -

- ○ Musical knowledge and skills --or--
- ○ General teaching skills

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

25. Which of the following two skills is MORE important in your daily teaching activities?

○ Sequencing and curriculum skills --or--
○ Knowledge of learners

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

26. -

○ General teaching skills --or--
○ School environment knowledge

General teaching skills = classroom management, establishment of routines, communication skills, etc.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

27. Which of the following two skills is MORE important in your daily teaching
activities?

○ Relating musical concepts to learners --or--
○ School environment knowledge

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

28. -

○ Knowledge of learners --or--
○ School environment knowledge

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

29. Which of the following two skills is MORE important in your daily teaching activities?

○ Administrative skills --or-

○ General teaching skills

Administrative skills = management of financial, travel, inventory, and student information.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

30. -

○ Sequencing and curriculum skills --or--

○ General teaching skills

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

General teaching skills = classroom management, establishment of routines, communication skills, etc.

31. Which of the following two skills is MORE important in your daily teaching activities?

○ Administrative skills --or--

○ School environment knowledge

Administrative skills = management of financial, travel, inventory, and student information.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

32. -

○ Musical knowledge and skills --or--

○ Knowledge of learners

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

33. Which of the following two skills is MORE important in your daily teaching activities?

○ Administrative skills --or--
○ Sequencing and curriculum skills

Administrative skills = management of financial, travel, inventory, and student information.

Sequencing and curriculum skills = Knowledge of effective methods and sequences for presenting music concepts.

34. -

○ General teaching skills --or--
○ Relating musical concepts to learners

General teaching skills = classroom management, establishment of routines, communication skills, etc.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

35. Which of the following two skills is MORE important in your daily teaching activities?

○ Musical knowledge and skills --or--
○ School environment knowledge

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

School environment knowledge = Working with parents, fellow teachers, community members, administrators, etc.

36. -

○ Administrative skills --or---
○ Relating musical concepts to learners

Administrative skills = management of financial, travel, inventory, and student information.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

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- ○ Relating musical concepts to learners

Musical knowledge and skills = performance skills on primary and secondary instruments, music theory, analysis, arranging, music history, instrument fingerings, repair, and conducting skills.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

38. -

- ○ Knowledge of learners --or--
- ○ Relating musical concepts to learners

Knowledge of learners = awareness of the social, physical, and psychological development levels of students and how these influence teaching.

Relating musical concepts to learners = Being able to relate musical ideas and concepts and organizing them in a way that students learn best.

39. If you have any questions, comments, or concerns regarding this survey,
please list them in the space below:

Thank you so much for taking the time to provide your opinions and recommendations. If you have any questions, or if you would like to receive a copy of a summary of the final results of the research study, please send a separate email to the primary researcher at smillican@ou.edu.

APPENDIX H – MAIN STUDY RESPONDENT COMMENTS

1 Please share any findings with me at [email address redacted] - I am interested in the results of this survey. Thank you.

2 I wish that I could of [sic] had more hands on training when it comes to rehearsing a band while I was in college, because that is what I do all day long. In my opinion, being a successful band director involves knowledge of all the instruments and actually playing all the instruments. It involves rehearsal techniques. Being able to listen and identify the problem area, and then form a strategy on how to fix the problem. It involves training students in the fundamentals of playing, i.e. scales, thirds, arpeggios, etc... I think less emphasis should be placed on the administrative side of things. Hope my comments are helpful. Nice survey!

3 I found this survey to be difficult in that all of the items are important. Ranking them in terms of most - least important has the appearance of some things not mattering as much as others. Please do not interpret my 5's, 6's, 7's, and 8's as unimportant. What we do is very complex and requires attention to all of the entries.

4 Thanks for giving me the opportunity to take this survey; very thought provoking. Be sure and share the results! Thanks!

5 My undergraduate degree was in Jazz Performance. I did no observation or student teaching as a JP major. My graduate degree is in music education. The opening questions seemed to assume that everybody taking the survey was an undergraduate education major. I believe that some participants may have studied a pure form of music. Thanks!!! Good Luck.

6 The 3rd section of this survey seems to be too long and not the best way to determine how people feel about certain skills.

7 I'd love to see the results of this survay [sic]. I hope they can be used by Universities to adjust their curriculum.

8 I would love to see the final outcome of this survey! Even after 34 years of teaching, I had to really stop and think a few times about what's most important to me in teaching music to my

students, and I'm not really sure I'd answer each question exactly the same a "second time around!" Thank you for inviting me to participate.

9   I believe that teaching is about the individual student more than the collective student that is studied in college. I have yet to meet a student that fits the mold of a "typical student." Surveys only encourage a collective view of society at the expense of the individual.

10 Fairly comprehensive. I do think I was forced to rank some very important items pretty low because of how they were paired. Few topics were unimportant.

11 some questions seemed to be repeated and I often chose a different answer because both are important things for teaching.

12 It is very hard to place any of these things above the others, because it is a unique balance of all of the skills mentioned in this survey that make for effective teaching and working in a school environment. The relative importance of these skills vary from day to day, and even class to class depending on what is happening in the class, with the students, with the teacher, and even with the weather. It is the ability to use all of the skills mentioned here in a flexible way to be a truly skilled educator.

13 If it is possible, I would like a copy of any results or statistical analysis that you might create. [email address redacted].

14 All of the concepts in this survey I would deem vital for any music educator. In ranking some of these concepts (most to least important), I found that the way some concepts were grouped together made it difficult to rank them accordingly. The individual concepts in each group seemed to have very little relation to one another.

15 I should add that one of the reasons that I rate administrative skills as less important, is that I have a paid assistant that takes care of many of the administrative responsibilities for me. If I did not have her, my answers might change with respect to that.

16 This was unique survey - I was able to really think about what was important on a daily basis - best wishes on your project.

17 Thank you!

18 I felt that many of the items that you asked to rank were on even par of importance. The highly qualified music educator has all of the skills that you have covered and more. They must have exceptional communication skills to teach, communicate to administration, parents, and the community that they are in. Their knowledge must be at a high standard in all areas of music. Music teachers that are very successful are not one dimensional in any manner.

19 it seems that the last third of the survey asked the same questions over and over...and while it is sometimes necessary to rank some skills over others, it must be remembered that many of these skills are so inter-related that it is equally important to do them all well and at the same time.

20 Putting a long list of important skills into a 1-8 order may create some false inferences.

21 It is more important to know how to teach music than to just know how to play an instrument yourself. A lot of great performers are terrible teachers, because they don't know how to teach music where learners with differing learning styles can all understand it.

22 I feel that many of these presented concepts were of equal importance. In most of these list and comparisons all of the items we were asked to prioritize are of crucial importance to the success of a band program.

23 Many of these skills depend upon each other, so it is difficult to choose between them.

24 Best of luck with your research.

25 Will I know the results of the survey?

26 Thank you for this opportunity. I found that some questions caused me to think about my own teaching. Also, some questions may be more applicable to beginning students and less so to more advanced players. The opposite is also true. What is important to an advanced student does not apply to the beginner. Overall, though, very thought-provoking, personal self-examination questions. Thanks!

27 You need all the skills listed in the last section to be a good teacher.

28 The last part of the survey was very difficult. Perhaps in a different area or fewer confusing combinations would fix that problem.

29 I started out as a voice major and planned on teaching elementary general and vocal music. I now teach band at a middle school. I still feel that I learn something new from my students and colleagues daily.

30 none

31 It is very difficult to choose between several of these (and ranking) because all the skills and concepts seem equally important in many cases.

32 none

33 It is frustrating having to rate things that are ALL important. Which is more important in running a race, your right foot or left foot? Well, both are are [sic] pretty darn important.

34 Many of your listing / rating requests in the second section have no relation and therefore no reference for placing one above the other in importance. List which is more important 1 through 3 ____ Your mother's birthday ____ the clarinet alternate fingering for E-flat ____ knowing the balance in your check book. You can list these, but there is not much relation. Tell [Dr.] Nancy [Barry, dissertation committee chair] that I said the number of contacts you made for this questionnaire was excessive.

35 I am a para-educator. I have been the "Band-Aide" at our school since 1995. Sometimes it's not how much "certified" education you possess, but how well you can relate to and reach the students.

36 It takes a long time!!!

37 The "Daily" importance does not reflect overall importance. Most music teachers, especially new ones, are very overwhelmed by the administrative aspect of their job, but it it [sic] not the day to day, hour to hour most important aspect.

38 Administrative tasks and Communication with the community are vital to my job, and yet I found myself not ranking it as high as the teaching things. Ranking the things in order of necessity was more difficult than it would have been to have a Likert (sp?) scale of 1-5 as in Very Important to Not Important. In my job, all things are necessary. I was quite lucky in my B.S. degree - They required a course in all of that information - I still use the notes from that class 23 years later!

39 I kept thinking I'd already answered the same question already- were there repeated questions? I found the ranking difficult- I feel they are all equally important for the most part! Many answers are unique to the school environment and an individual teacher's style and personality-I hope this will be taken into consideration. Can we get a prinable [sic] copy of the questionnaire? I would love to have it to use as a reference/resource to help me in my own teaching... Thanks.

40 I would love to see what results you get and what they are used for.