

TEACHING BEHAVIORS OF MIDDLE AND HIGH SCHOOL ORCHESTRA  
DIRECTORS IN THE REHEARSAL SETTING

by

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## DISSERTATION ABSTRACT

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Doctor of Philosophy

School of Music and Dance

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Title: Teaching Behaviors of Middle and High School Orchestra Directors in the Rehearsal Setting

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The purpose of this study was to investigate the frequency and the time that middle and high school orchestra directors engaged in seven specific teaching behaviors in a rehearsal setting. Of particular interest was the amount of time orchestra directors engaged in conceptual teaching behaviors operationally defined as verbal behaviors of orchestra directors in which they attempt to make students aware of, have an understanding of, and/or be able to transfer any musical concept. Participants ( $N = 12$ ) were full-time middle and high school orchestra directors teaching in Washington, Oregon, or California. Each participant submitted a video recording of two regular orchestra rehearsals. Video recordings of participants were divided into 20-minute segments and randomly selected for observation of seven specific and operationally defined teaching behaviors: (a) nonmusical behavior, (b) nonverbal instruction (direction), (c) verbal instruction (direction), (d) noninteractive listening, (e) nonverbal feedback, (f) verbal feedback, and (g) conceptual teaching. These seven teaching

behaviors were analyzed using the *Simple Computer Recording Interface for Behavioral Evaluation (SCRIBE)* of Duke and Stammen (2007). The data were reported in the form of the frequency with which each behavior occurred, the average time for each behavior expressed in minutes and seconds, and the percentage of time used on each behavior. Findings on conceptual teaching were reported.

The results indicated that, on average, orchestra directors spent slightly more than 5% of the observed rehearsal time on conceptual teaching. Most of the instructional time was used on nonverbal instruction (28.15%) and verbal instruction (27.76%). Orchestra directors observed in this study used the least amount of time (2.42%) on nonverbal feedback. The most concerning finding of the study was the time orchestra directors used on nonmusical behaviors (14.70%), and the most interesting finding of the study was that middle school orchestra directors used twice as much time (7.40%) as high school orchestra directors (3.21%) on conceptual teaching. The findings of this study provided suggestions for future research and implications for music educators.

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# CHAPTER I

## INTRODUCTION

A substantial amount of research in education has focused on finding empirically supported methods that would benefit the learning of students (Grant & Drafall, 1991; Lather, 2004; Perry, 1989). Two broad themes that recur throughout the “process-product” research in education are: (a) academic learning is influenced by the amount of time that students spend engaged in an appropriate academic task, and (b) students learn more effectively when their teachers first structure new information for them and help relate it to what they already know, and then monitor their performance and provide appropriate feedback (Brophy & Good, 1986; Hines, Cruickshank, & Kennedy, 1985; Hogan, Rabinowitz, & Craven; 2003).

Studies in education that were primarily concerned with examining the relationship between the use of time in academic settings and the students' academic achievement found a positive correlation between the amount of time teachers and students spent on subject content and the attainment of learning goals (Berliner, 1976, 1988). At the same time, the research that investigated the relationship between teaching behaviors and students' learning outcomes offers evidence that students learn what they are taught during class, what they practice in a given time, and what they think about during and after class (Doyle, 1983; Driscoll, 2005). Madsen and Yarbrough (1985) condense these findings into a simple observation that “what the teacher does is what the students get” (Madsen & Yarbrough, 1985, p. 8). “What the teacher does” translates into



the teaching behaviors and teaching strategies teachers elect to use during instruction time.

Rosenshine and Furst (1973) have argued that educational researchers should start a scholarly inquiry with descriptive studies of the phenomenon, followed by preliminary testing using correlational techniques. Only when these stages of research have been completed should experimental methods take place. Studying the choices teachers make with regard to the use of time on various teaching behaviors and a simple report on the correlation between those variables may constitute the first, yet very important, step toward establishing foundations for empirical “process-product” evidence in any subject area. The present study attempts to make a contribution to the limited research on the use of time and teaching behaviors in string education settings by investigating the use of time spent on seven specific teaching behaviors: (a) nonmusical behavior, (b) nonverbal instruction (direction), (c) verbal instruction (direction), (d) non-interactive listening, (e) nonverbal feedback, (f) verbal feedback, and (g) conceptual teaching during middle and high school orchestra rehearsals.

Linking positive learning outcomes to only two variables (time and teaching behaviors), however, may not provide the sophisticated matrix needed to capture success in learning, which is a complex process. Other variables, such as teaching strategies, may play an important role in the advancement of students' learning, and measuring the time teachers spend engaged in a specific teaching strategy may be of interest to the learning community as well. Teaching strategies represent “actions and interactions that take place in classrooms and studios after curriculum goals have been established” (Tait, 1992, p. 525). Some teaching strategies are specifically developed to support developmental needs

of students, and successful teachers utilize these strategies in their teaching practices (Shulman, 1987).

The wealth of research on teaching and learning also covers the relationship between developmental changes --physical, personal, social, and cognitive, --which rapidly occur during the formal years of schooling and learning outcomes. To understand the role of cognitive developmental changes, Piaget's theory of cognitive development proposes that from birth to early adulthood, students go through four cognitive development stages: *sensory-motor*, *pre-operational*, *operational*, and *formal operational* stages (Piaget, 1951, 1970b, 1971). He proposes that as adolescents progress through the biological process known as *puberty*, their cognitive abilities transform as well, as they head through a *formal operational* stage of cognitive development. Upper-grade middle and high school students are capable of thinking beyond knowing and understanding. They can think hypothetically and abstractly, they can evaluate and analyze, they can solve problems and come up with creative solutions -- all higher levels of thinking (Anderson & Krathwohl, 2001; Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) and their ability to transfer what they have learned to a new learning situation rapidly grows (Bransford, Brown, & Cocking, 2000; Perkins, Jay, & Tishman, 1993). Piaget's theory of cognitive development suggests that adolescent students might exhibit homogeneous thinking behaviors.

However, while data from cross-sectional studies of children seem to support Piaget's assertion that biological development drives the movement from one cognitive stage to another (Renner et al., 1976), data from cross-sectional studies of adolescents do not support the assertion that all adolescents automatically move to the *formal*

*operational* stage as they biologically mature (Harding, 1986; Kuhn, Langer, Kohlberg & Haan, 1977; Martorano, 1977). This research indicates that only 30 to 35% of high school seniors attain this stage of cognitive development. It appears that while maturation establishes the basis, a special learning environment and teaching that aims at development of higher levels thinking skills are required for more adolescents to attain the *formal operational* stage (Beyer, 1997, 2008). One of the teaching strategies that may support middle and high school students' cognitive development is *conceptual teaching* (McClain, 2005).

This teaching strategy was derived from the constructivist learning orientations of Piaget and Vygotsky and the educational psychology positions of Bruner and Ausbel. The main intention of this strategy is to enable students to engage in complex cognitive processes that lead to understanding, followed by transforming and using knowledge in new situations (Bruner, 1973, 1986).

While recently an investigation of conceptual teaching received some attention at higher education levels (Feldman, 2003; Klausmeier, 1992; Mackenzie, 2008; Maclellan, 2005; Mayer, 2002) and in academic subjects in K-12 settings (van Boxtel, van der Linden, & Kanselaar, 2000; Gunel, Hand, & McDermott, 2009; Khalil, Lazarowitz, & Hertz-Lazarowitz, 2009; Lawton, 1977; Pugh, Linnenbrik-Garcia, Koskey, Steward, & Manzey, 2010), the research on conceptual teaching in music education settings has been very limited. The importance of this teaching strategy in music education settings is based not only on cognitive needs of music students but also on the premise that "all of music teaching should occur for one overriding purpose: to instill in our students the ability to conceptualize music as a craft, an art, a body of knowledge, and a medium of

self-expression and creativity” (Froehlich, 1992, p. 563). Of particular interest to the present study was the amount of time that middle and high school orchestra directors engage in conceptual teaching as operationally defined.

In a landmark study on education in American public schools known as *A Place Called School* (Goodlad, 2004), Goodlad expressed his concern about the proportion of attention and time high school teachers across all subjects spend on repetition of basic facts and skills, neglecting the development of higher levels of thinking and the students’ abilities to analyze, evaluate, and create (Bloom et al., 1956 as revised by Anderson & Krathwohl, 2001). Higher thinking orders are consistent with Piaget’s *formal operational* stage of cognitive development (Piaget, 1974). In only rare instances did Goodlad find evidence that instruction in high school classes supports higher levels of thinking and “goes beyond mere possession of information to a level of understanding” (Goodlad, p. 236).

In chapter seven, “What Schools and Classrooms Teach” (Goodlad, 2004), the author discussed the common teaching practices and strategies in various content areas. He pointed out that in high school music classes, most of the time is spent on rehearsals for performances, and the focus is primarily on teaching technical aspects of the musical composition, such as “proper playing habits,” which engages students in practicing only the lower cognitive processes. Goodlad expressed concern that these teaching strategies and methods prevent the development of cultural expression and artistry, which is the very purpose of music and art classes in schools. “The need for expression lies just back of the human need for food, water, and socialization...to grow up without the opportunity

to develop such sophistication in arts appreciation is to grow up deprived” (Goodlad, 2004, p. 220).

Goodlad's concerns can be translated into questions regarding music teachers' use of time in relation to various teaching behaviors and appropriate teaching strategies. While a body of studies on the utilization of time in various music education settings may suffice, the research on usage of time in string education settings is limited. The same may be stated for research on teaching behaviors and studies that examined effectiveness of different teaching strategies.

One way to organize the studies in music education concerned with the utilization of time would be by the co-relational variable. Certain studies that took place in varied music education settings simply reported the amount of time teachers used on different teaching behaviors (Blocher, Greenwood, & Shellahamer, 1997; Brendell, 1996). Other studies investigated the use of time in relationship to different variables, such as the level of instruction and type of class (Caldwell, 1980; Forsythe, 1977; Madsen & Geringer, 1983; Watkins, 1993, 1996; Witt, 1986) or the level of teaching experience (Goolsby, 1996, 1997, 1999; Henninger, Flowers, & Council, 2006; Moore & Booney, 1987; Wagner & Struel, 1979). The general conclusion was that music teachers at the elementary level use more time on instruction, while secondary music teachers spend more time on performance. More experienced teachers spend less time on talking, and they model and perform more, while less experienced teachers spend more time on nonmusical tasks such as “getting ready.” It may be concluded that music teachers’ use of instructional time is related to the level at which they teach and the level of their teaching experience.

While investigating the use of time in music education settings is an important step in understanding of what is happening in music classes, music education researchers have also examined verbal and nonverbal teaching behaviors of music teachers. Researchers proposed that verbal behaviors among music teachers come in two forms: (a) as verbal instruction (Beebe, 2007; Colprit, 2003; Duke, 1999; Goolsby, 1997; Helper, 1986; Strauser, 2008) and (b) as verbal feedback (Duke & Henninger, 2002; Duke & Madsen, 1991; Salzberg & Salzberg, 1981; Schmidt, 1985; Siebenaler, 1997).

The findings of studies on verbal behaviors of music teachers in relationship to the use of time were not consistent. While some studies reported that more than 50% of the time during applied lessons and ensemble rehearsals was spent on teachers' verbal behaviors (Carpenter, 1988; Kostka, 1984; Yarbrough & Price, 1989), other studies hold that verbal department occupied less than 50% of the total instructional time in the same instructional settings (Caldwell, 1980; Strauser, 2008). In either instance, it appears that music teachers spend most of their instructional time on some kind of verbal behaviors.

Since music teachers engage in more forms of teaching behaviors than just various types of verbal behaviors, researching teachers' verbal behaviors needs to be complemented by studying nonverbal categories of teaching behaviors. Various forms of nonverbal behaviors such as performance, modeling, conducting, and listening were also the subjects of research in music education. In general, when it comes to time spent on performance, across various music education settings, students perform for approximately half of the total time (Hendel, 1995; Kostka, 1984; Schmidt, 1989), but the overall proportion of the students' performance time does not appear to be positively related to learning outcomes (Siebenaler, 1997; Speer, 1994; Yarbrough & Price, 1989).

Several studies on other forms of nonverbal instruction in music education settings, such as modeling, demonstrated that musical and aural modeling are more effective than verbalization to improve students' performance and attitude (Anderson, 1981; Dickey, 1992; Ebie, 2004; Gillespie, 1991; Grimland, 2005; Hewitt, 2001; Mann, 2008; Rosenthal, 1984; Rosenthal, Wilson, Evans, & Greenwald, 1988; Rutkowski & Miller, 2003). In addition, some of the instructional time is used on “getting ready activities” (Goolsby, 1999; Witt, 1986).

While research on the use of time and various forms of verbal and nonverbal teaching behaviors in music education settings may suffice, only limited research in music education offered findings on the use of specific teaching strategies. Some of those teaching strategies, such as *sequential patterns*, were adapted from other academic areas (Arnold, 1995; Bowers, 1997; Goolsby, 1999; Hendel, 1995; Price, 1983, 1989, 1999; Speer, 1994; Yarbrough, Price, & Hendel, 1994; Yarbrough & Price, 1981, 1989) while others, such as *comprehensive musicianship*, were developed by music educators out of the need to better meet students' learning needs in light of contemporary music education philosophy (Bess, 1991; Choksy, Abramson, Gillespie, Woods, & York, 2001; Garofolo & Whaley, 1979; Hendricks, 2010; Heisinger, 1991; Sindberg, 2007; Wentworth, 1977). Both of those strategies were concerned with “process-product” evidence, and they were not concerned with developmental needs of students.

The music education community (music teachers, researchers, and theorists) in the 1960s recognized the need for teaching practices that would support developmentally appropriate learning at all ages under the influence of several important educational transitions. Prompted by the translation of Piaget’s research into English, several

American educational psychologists proposed fresh views and theories on learning. For instance, Bruner (1960, 1966) introduced the theory of *conceptual teaching* and developmentally sequenced curricula known as *spiral curriculum*. Both of his theories were discussed at the Tanglewood Symposium (1967) and three sessions of the Ann Arbor Symposium (1978, 1979, & 1981). Soon after, *spiral curriculum* and *conceptual learning* became the foundations of elementary music classes (Mark, 1996).

Piaget's and Bruner's theories not only prompted the appearance of developmentally appropriate curricula and instructional practices in music education settings, but also contributed to the emergence of early theories of musical development (e.g., Swanwick & Tillman's *Spiral Model of Musical Development*, 1986). In addition, Bruner's theory of conceptual teaching served as the basis for developing teaching strategies that would promote the goals of Reimer's aesthetic education (Teatle & Cutietta, 2002).

The present study is a replication of the descriptive study conducted in middle and high school band rehearsal settings by Blocher, Greenwood, and Shellahamer (1997) in which they investigated the time allotted for the seven specific teaching behaviors (nonmusical, nonverbal instruction, verbal instruction, non-interactive listening, nonverbal feedback, verbal feedback, and conceptual teaching) in rehearsal settings, with particular attention given to the time spent on conceptual teaching. Conceptual teaching in that study was operationally defined as "verbal behaviors of orchestra directors in rehearsal settings by means of which the directors attempt to make students aware of, have an understanding of, and/or be able to transfer any musical concept" (Blocher et al. 1997, p. 459).



## Need for the Study

The previous research suggests that there are two major behaviors that students and music teachers at the secondary level engage in during rehearsals: 1) performance (Carpenter, 1988; Watkins, 1993, 1996; Witt, 1986; Yarbrough & Price, 1981, 1989) and 2) different forms of verbal and nonverbal communication pertaining to musical and nonmusical tasks (Rosenthal, 1984; Dickey, 1992; Goolsby, 1996). Goodlad (2004) pointed out that most of the time in high school music classes is spent on repetition and practicing of “proper playing habits,” therefore focusing on lower cognitive processes such as knowing, understanding, and applying. Piaget's theory of cognitive development, on the other hand, suggests that young individuals who have reached the *formal operational* stage (ages 11 and up) of cognitive development are developmentally capable of functioning in higher-order thinking levels such as analysis, evaluation and creation. Harding (1986) found that only 40% of undergraduate music majors fully operated at the *formal operational* stage. His suggestion to music education was to search for methods that would enable students to develop the levels of thinking that are representative of the *formal operational* stage. Cognitive theorists Bruner and Ausbel advocated conceptual teaching as the teaching strategy for developing these higher-level cognitive skills.

Research in music education indicates that conceptual teaching is a neglected teaching strategy in rehearsal settings (Garafolo & Whaley, 1979; Watkins, 1993, 1996; Strauser, 2008). As the findings of Misenhelter's study (2000)--where non-music majors scored higher than vocal or instrumental music majors on the recognition of conceptual and non-conceptual teaching behaviors--suggest, it is not the years of musical experience,

but the training that focuses on musical concepts that helps recognition of “conceptual” and “non-conceptual” teaching strategies. Blocher et al. (1997) found that “on average, directors spend less than 3% of observed teaching time engaged in conceptual teaching behaviors” (p. 457). These studies suggest the need for further investigation of conceptual teaching as it relates to secondary music classes.

Although research in teaching strings and orchestra has investigated the use of time (Allard, 1992; Colprit, 2000; Duke, 1999; Elsworth, 1985; Witt, 1986), verbalization (Coding, 1987; Colprit, 2000, 2003; Duke, 1999; Salzberg & Salzberg, 1981; Witt, 1986), and teaching strategies in various string teaching settings (Andrews, 2004; Gholson, 1998; Mishra, 2000; Nelson, 1983), no study conducted in school orchestra rehearsal settings measured those behaviors in a comprehensive way. Furthermore, there is no study in orchestra settings that focuses on the use of time on conceptual teaching.

Since up-to-date research in strings teaching does not provide much scientific evidence on the use of time and various teaching behaviors during orchestra rehearsals (including conceptual teaching), a study concerned with the aforementioned teaching behaviors promises valuable findings for both string teaching and the music education research community. The research-based information that this study attempts to supply may reveal which teaching behaviors and strategies are more prevalent among orchestra teachers and thus open the doors to awareness of whether teachers indeed teach “how” they think they “should” be teaching. Specifically, observations of behaviors may help to clarify what teaching behaviors orchestra teachers engage in during rehearsals, how frequently and for how long they are engaged in each of these behaviors, and particularly, if orchestra teachers actually engage in conceptual teaching strategies.

## **Purpose Statement**

The primary purpose of this study was to measure the use of time on seven specific teaching behaviors exhibited by orchestra directors in rehearsal settings. Of particular interest was the amount of time orchestra directors engaged in conceptual teaching behaviors. In replication of a study by Blocher et al. (1997), video recordings of participants were studied for seven specific teaching behaviors categories: (a) nonmusical behavior, (b) nonverbal instruction (direction), (c) verbal instruction (direction), (d) noninteractive listening, (e) nonverbal feedback, (f) verbal feedback, and (g) conceptual teaching. These seven teaching behaviors were analyzed using the *Simple Computer Recording Interface for Behavioral Evaluation (SCRIBE)* (Duke & Stammen, 2007). The data were reported in the forms of frequency, the average time for each behavior expressed in minutes and seconds, and the percentage of time used on each behavior. Findings on conceptual teaching were reported.

For the purpose of this study, teaching behaviors were operationally defined in Table 1 as follows (definitions taken from Blocher et al., 1997, p. 461):

Table 1.

*Operational Definitions of Seven Teaching Behaviors*

Teaching Behavior	Operational Definition
Nonmusical	Teacher disciplines students. Down time. Non musical directions. Announcements. Interruptions from office, messengers, visitors.
Nonverbal instruction (direction)	Teacher gives instruction through proactive conducting. Teacher's facial expressions, body language, and other nonverbal cues instructor elicit responses.
Verbal instruction (direction)	Teacher gives verbal instructions or directions that deal with specific musical attributes of the performance at hand.
Non-interactive listening	Teacher purposely listens to student performance but takes no active part in the performance. Students play with no visible or aural teacher interaction. Teacher beats time but does not attend to musical performance through conducting gestures, facial response, eye contact, or verbal response.

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Nonverbal feedback

Teacher provides nonverbal reaction that is based on student responses that reinforces, shapes, or changes further student responses. Teacher responds in a nonverbal manner to something students do in such way that the teacher lets the students know something about their performance.

Verbal feedback

Teacher provides verbal reaction to student response that reinforces, shapes, or changes further student performance. Teacher verbally responds to something that students do in such a way that the teacher lets the students know something about their performance.

Conceptual teaching behaviors

Verbal behaviors of orchestra directors in rehearsal settings by means of which the directors attempt to make students aware of, have an understanding of, and/or be able to transfer any musical concept.

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## **Research Questions**

This study sought answers to the following three questions:

1. How frequently do middle and high school orchestra directors engage in each of the seven specific teaching behaviors during the typical rehearsal time?
2. How much time (average time and percentage of time) do middle and high school orchestra directors engage in each of the seven specific teaching behaviors?
3. Of particular interest to this study was how often and how much time do middle and high school orchestra directors engage in conceptual teaching as operationally defined?

Table 2 defines the terms and concepts relevant to the study.

Table 2.

*Definition of Terms Used in the Study*

Term	Definition
Advance organizer	A statement of inclusive concepts used to introduce and sum up the material that follows.
Cognitive development	Gradual orderly changes by which mental processes become more complex and sophisticated.
Cognitive domain	The six basic objectives as listed in Bloom's taxonomy of thinking or cognitive domain (Bloom, Engelhart, Frost, Hill, & Krathwohl, 1956). The six objectives as described in the revised Bloom's taxonomy and formalized in <i>A Taxonomy for Learning, Teaching, and Assessing</i> (Anderson & Krathwohl, 2001) are: (a) Remembering, (b) Understanding, (c) Applying, (d) Analyzing, (e) Evaluating, and (f) Creating.
Concept	A general category of ideas, objects, people, or experiences whose members share certain properties.

Table 2. (continued)

Term	Definition
Conceptual teaching: <i>Operational definition</i>	<p>“A verbal behavior of a teacher in which the teacher attempts to make students aware of, have an understanding of, and/or be able to transfer any musical concept” (Blocher et al., 1997, p. 457).</p>
Conceptual teaching: <i>Theoretical definition</i>	<p>Teaching that involves students in complex cognitive processes that lead to understanding and appropriately transforming and using knowledge, skills, and ideas.</p>
Conceptual teaching in and through music	<p>Conceptual teaching in and through music engages students in “creativity and aesthetic sensitivity, critical decision making about music, and skills of musical transfer” (Froehlich, 1992, p. 563, in R. Colwell, (Ed.), 1992). This approach to teaching music is concerned with complex cognitive processes that lead to understanding and it encompasses teaching strategies and techniques that encourage the development of students' problem solving skills, transfer of learning skills, and creativity, all known as higher-level thinking skills.</p>



Table 2. (continued)

Term	Definition
Conservation	The principle that some characteristics of an object remain the same despite changes in appearance (Piaget, 1963).
Discovery teaching	Bruner's approach to conceptual teaching, in which students work on their own to discover the basic principles of a concept (Bruner, 1966).
Expository teaching	Ausbel's approach to conceptual teaching, in which teachers present material in a complete, organized form, moving from broadest to more specific concepts (Ausbel, 1963).
Higher-level thinking skills	Upper three objectives of Bloom's taxonomy of cognitive domain: analyzing, evaluating and creating (Bloom et al. 1956 as revised by Anderson & Krathwohl, 2001).
Inservice teachers	Usually teachers with several years of teaching experience.
Novice teachers	Usually teachers with limited number of years of teaching experience.

Table 2. (continued)

Term	Definition
Performance approximation	A teaching strategy that includes any performance of rhythm or pitch that was not performed on a string instrument, including singing, clapping, counting, conducting, and any other means of producing musical sound or movements (Duke, 1999).
Physical positioning	A teaching strategy in which the teacher touches or nearly touches the student or instrument in order to change something the student is doing or to indicate what the student should be doing (Duke, 1999).
Pre-service teachers	Usually student-teachers or students working toward their degrees in education and/or teaching licenses.
Proximal positioning	A teaching strategy that considers the adjustments that a teacher makes in order to assist a student through zones of proximal development (Gholson, 1998).
Taxonomy	Classification system.

Table 2. (continued)

Term	Definition
Teaching musical concepts	<p>“The teaching of the knowledge and skills needed to identify organized sound according to its elements” (Froehlich, 1992, p. 563, in R. Colwell, (Ed.), 1992). In this approach to teaching music, students learn to identify elements of music by labeling them.</p>
Transfer	<p>Influence of previously learned material on new material.</p>

### **Scope and Delimitations of the Study**

This study was concerned with the use of time on seven specific teaching behaviors as they occur in orchestra rehearsals. The data collection was limited to the observed time and frequency of these behaviors.

Observed behaviors were not further classified into their more detailed components (e.g., verbal feedback was not identified as positive or negative). Participants were selected without respect to their years of teaching experience or educational background. The study did not factor in the participant’s stage of preparation within the course of instruction (i.e., whether new literature had been introduced recently).

## **CHAPTER II**

### **REVIEW OF LITERATURE**

During rehearsal time, instrumental music teachers engage in a number of behaviors. They devote a great amount of time preparing ensembles for public performances (Watkins, 1993,1996; Yarbrough & Price, 1989) through verbal instruction (Beebe, 2007; Buckner, 1997; Carpenter, 1988; Dickey, 1991; Goolsby, 1997; Hair, 1981; MacLeod, 2010) and nonverbal instruction such as modeling (Henley, 2001; Hewitt, 2001; Rosenthal, 1984; Woody, 2006) and conducting (Acklin, 2009; Bergee, 2005; Byo & Austin, 1994; Greschensky, 1985; Price 1983; Vallo, 1990; Yarbrough, 1975; Worthy, 2006). In addition, teachers modify students' behaviors through positive and corrective feedback (Dickey, 1991; Duke & Henninger, 1998, 2002; Salzberg & Salzberg, 1981; Siebenaler, 1997), and they also listen in an interactive or non-interactive way (Henley, 2001; Rosenthal, 1984). Some rehearsal time is used for nonmusical behaviors or “getting ready activities” (Goolsby, 1996; Witt, 1986). During rehearsal time, instrumental music teachers have opportunities not only to teach skills that are necessary for successful music performances, but also to teach students musical concepts in a way that may support the development of students’ higher-level thinking skills (Blocher et al., 1997; Greer & Lundquist, 1976; Hendricks, 2010; Misenhelter, 2000; Strauser, 2008; Watkins, 1993, 1996; Woody, 2006).

The purpose of this study was to investigate the amount of time middle and high school orchestra directors engage in seven specific teaching behaviors with particular

attention given to the time dedicated to conceptual teaching during a typical orchestra rehearsal. These seven teaching behaviors were adopted from the Blocher et al. (1997) study in which the investigators proposed that these behaviors were the most represented teaching behaviors among middle and high school band directors.

As the present study is focused on teaching behaviors among orchestra teachers, this review will begin with an overview of literature specifically relevant to teaching strings. The subsequent portions of the literature review will concentrate on research about the use of time in music education settings, followed by literature specifically related to verbal and nonverbal teaching behaviors, and then by literature focused on sequenced teaching strategies as observed in varied music teaching settings. This review will conclude with the theoretical basis for conceptual teaching and a review of literature related to conceptual teaching in music education settings.

The reviewed studies and summaries of the theoretical foundations are categorized and reported according to the following six subheadings: (1) Review of Studies on Teaching Strings that Relate to the Present Study, (2) Review of Studies on the Use of Time in Music Education Settings, (3) Review of Studies on Verbal Teaching Behaviors in Music Education Settings, (4) Review of Studies on Nonverbal Teaching Behaviors in Music Education Settings, (5) Review of Studies on Teaching Strategies in Music Education Settings, and (6) Review of Studies on Conceptual Teaching in Music Education Settings with a Theoretical Foundation of Conceptual Teaching.

## **Review of Studies on Teaching Strings that Relate to the Present Study**

Since the early twentieth century, performing music ensembles such as bands, choirs, and orchestras have enjoyed increasing popularity in American public schools (Humphrey, 1989; Humphrey, May, & Nelson, 1992). For example, a survey conducted on the number of orchestras in schools between 1919 and 1920 reported that of 359 cities surveyed, 278 had orchestras in schools (Humphrey, 1989). Then, in the 1930s, the number of orchestras stabilized as the number of school bands began to increase (Turner, 2001). The tendency of school bands to outnumber orchestras continued until the 1960s when, for numerous reasons, the very existence of orchestra programs in schools was threatened (Hamann & Gillespie, 2004).

The formation of professional organizations such as the American String Teachers Association (ASTA) and the National School Orchestra Association (NSOA) in the late 1940s and 1950s, along with the performance of Suzuki's students at the 1964 Music Education National Conference (MENC) convention in Philadelphia, increased awareness of string playing and brought renewed recognition to the importance of string education (Mark & Garry, 1999). Since the 1980s, the number of school orchestras and students studying strings has increased, while the number of orchestra teachers has remained stable (Hamann & Gillespie, 1998). At the same time, for a not yet empirically established reason, the research on teaching strings has been limited not only in the number of studies but also in the scope of topics as it appears to be confined “to selected aspects of string teaching techniques and methods” (Costanza & Russell, 1992, p. 503).

Research on tendencies in music education inquiry supports this assertion. Ebie (2002) investigated the frequency of studies published in the *Journal of Research in Music Education (JRME)* from 1953-2002 in relationship to the participants. He found that the number of studies that included band subjects significantly outnumbered choral and vocal music, general music, and string or orchestra classes combined. Ebie reported “a surprising lack of research involving subjects in choral or vocal music, string or orchestral groups, and nonperformance music classes” (Ebie, p. 290).

In addition, Kantorski (1995) analyzed the content of doctoral research between 1936 and 1992 that related to string education. His study revealed that the three topic areas addressed most often in string education dissertations were techniques/skills, performance practices, and information resources. The topics least often researched in doctoral string education pertained to teaching strings in music education settings, such as orchestra, as well as string teachers' preparation and education.

Despite the limited number and the restricted scope of studies in strings, it is possible to identify a group of studies in teaching strings that relates to the present investigation and to organize them as follows: a) Studies on the use of time in various string teaching settings (Allard, 1992; Colprit, 2000; Herkstroeter, 2001; Duke, 1999; Witt, 1986), b) Studies on teaching behaviors of string teachers (Bergee, 2005; Elsworth, 1985; Erwin, 1993; Kotchenruther, 1999; MacLeod, 2010), c) Studies on verbal behaviors of string teachers (Colprit, 2003; Salzberg & Salzberg, 1981; Thomas, 1989), d) Studies on teaching strategies of string teachers (Bergonzi, 1997; Duke, 1999; Gillespie, 1988, 1991, 1993; Gholson, 1998; Jensen 1990; Smith, 1985), and e) Studies on teaching musical concepts and conceptual teaching in strings (Hendricks, 2010;

Nelson 1980,1984; Townsend, 1999; Wenworth,1977). This research literature relates to the topic of this study because it is concerned with the use of time and teaching behaviors which are the subject of the current investigation.

### **Studies on the use of time in various string teaching settings.**

The first two studies reviewed below are concerned with the use of time in string education settings (Allard, 1992; Witt, 1986), and the next two are concerned with the use of time in private studios of string teachers (Colprit, 2000; Duke, 1999).

Allard (1992) compared the use of time, students' attentiveness, and performance qualities of beginning elementary string groups taught by specialists and non-specialists. Data were gathered from videotaped observations of twelve specialists and nine non-specialists. Allard found no significant difference between the two groups in overall getting ready time, tuning time, music organization, other getting ready time, non-performance time, and performance time. While classes taught by string specialists exhibited a higher performance quality--even when specialists were assigned higher teacher-student ratios--an analysis of data indicated no significant difference in students' attentiveness for classes taught by specialists or non-specialists.

Witt (1986) investigated the use of time and students' attentiveness in secondary instrumental ensembles (band and orchestra) in relation to student performance, teaching episodes, and getting ready activities. Data on the use of time were collected through observations of 48 instrumental music rehearsals equally divided between orchestra and band classes. Data on student attentiveness were recorded on an observation form specifically designed for this study. The investigator found that overall, the largest



percentage of rehearsal time was used for student performance (43.3%), followed by teaching episodes (38.9%) and getting ready activities (17.8%). In orchestra classes, teaching episodes were fewer ( $M = 38.21$ ) but of longer duration ( $M = 30.97$ ) than in band classes. The amount of time spent on getting ready activities was longer in orchestra classes ( $M = 609.42$  sec) than in band settings ( $M = 436.46$  sec) primarily due to the difference in tuning time between band and orchestra classes. Almost twice as much time was used on tuning orchestra instruments ( $M = 301.04$  sec) as band instruments ( $M = 167.13$  sec). Orchestra students observed in this study were less attentive in both performance (4.35%) and nonperformance conditions (24.90%). Performance off-task rates for band students observed in this study averaged 2.43% and nonperformance off-task rates averaged 10.79%.

Duke (1999) examined the use of instructional time allocated to different behaviors of teachers and students in the studios of 29 acclaimed Suzuki teachers. The study was designed to answer specific research questions that were deemed important to the Suzuki teaching community at the International Suzuki Institute Research Symposium (Aber, 1990). The videotapes of three consecutive individual lessons given to two or three students in each studio were analyzed for descriptive characteristics of students, the use of time on different behaviors for teachers and for students, and for the relationship between teaching behaviors and students' characteristics. For teachers in this study, Duke reported that the most prevalent teaching behavior was verbalization (65%) followed by teacher performances (27%) and performance approximations (9%). The students' performances appeared to be the most prevalent student behavior (53%), followed by students' talk (11%). Perhaps the most interesting finding of this study was the data on

the high proportion of positive feedback in comparison to negative feedback. It is noticeable that 12% of the observation time included positive verbal feedback and only 2% included negative feedback. This finding is in sharp contrast to all published research on teacher feedback in music (Carpenter, 1988; Hendel, 1995; Yarbrough & Price, 1981, 1989) as positive feedback in those studies does not even approach the observation of this study.

Another study with Suzuki string teachers was conducted by Colprit (2000). She investigated the use of instructional time in relationship to accomplishing a positive change in student performance labeled as the “target.” The “rehearsal frame,” or the segment of the rehearsal in which the teacher explained what and how to change in order to accomplish the “target” or performance goal, served as the unit for the analysis. Twelve violin and cello Suzuki teachers videotaped two consecutive lessons with two of their regular students (for a total of 24 students). The investigator recorded the time and duration of selected teacher and student behaviors using *SCRIBE*. Two experienced, trained, and independent observers evaluated the student performance trials as successful or unsuccessful according to the goal stated by the teacher. Colprit found that the main activity for teachers across all rehearsal frames was teacher verbalization (45%), followed by teacher modeling (20%). The main activity for students was performance (41%) and verbalization (3%). In only 42% of the performance trials did students successfully accomplish the performance goal or “target.”

### **Studies on teaching behaviors of string teachers.**

The first two studies (Elsworth, 1985; Erwin, 1993) reviewed below are concerned with teaching behaviors of string teachers, and the third study (MacLeod, 2010) is concerned with a comparison of teaching behaviors between orchestra and band directors.

The rehearsal characteristics and contextual variables of effective and less effective high school orchestra directors were compared by Elsworth (1985). The effectiveness of participating orchestra directors was determined by expert judges who evaluated audio tapes of two “sight-reading” and “refinement” rehearsal segments. Although no statistically significant difference was found between the two groups, the findings of this study suggested several trends that may be indicative of effective orchestra directors. Effective orchestra directors verbally prepared students for sight-reading, counted less while playing, emphasized melodic and rhythmic accuracy while sight-reading, and accentuated musicality while refining. Interestingly, the demographic information of the participants and their students revealed that effective orchestra directors took more university string courses and had more students studying privately in their orchestras.

Similarly, Erwin (1993) sought to determine if secondary string teachers were stable in regard to the content and use of instructional strategies within and across rehearsals. He concluded that the most frequent behavior among orchestra teachers was conducting, while demonstration and verbal imagery occurred in less than 3% of

rehearsal time. Overall, the rehearsal behaviors of secondary orchestra teachers who participated in this study were stable across rehearsals.

Several studies investigated the similarities and differences between teaching behaviors of orchestra and band teachers (MacLeod, 2010; Vallo, 1990; Witt, 1986). The purpose of the MacLeod (2010) study was to compare the instructional strategies used by forty experienced band and orchestra teachers when teaching first-year students an unfamiliar song. The investigator recorded the lessons, and the recorded materials were coded for twelve operationally defined teaching behaviors by three trained independent observers. The twelve teaching behaviors included: (a) an echoing technique, (b) question and answer, (c) verbal instruction, (d) co-verbal instruction, (e) modeling with instrument, (f) modeling with instrument during student performance, (g) modeling without instrument, (h) modeling without instrument during student performance, (i) conducting, (j) student performance, (k) pedagogical touch, and (l) classroom management. Significant differences between band and orchestra teachers were found in nine out of twelve behaviors. In general, band teachers used verbal instruction, conducting, and question and answer techniques and allowed for student performance with greater frequency than orchestra teachers. At the same time, orchestra teachers used echoing techniques, instruction, modeling, modeling with an instrument during performance, and pedagogical touch with greater frequency than band teachers. The amount of time spent on tuning was considerably different between the two groups, and the number of times that conducting was used was also significantly different. Seventeen orchestra directors tuned their groups at the beginning of class while only one band director chose to do so. Band directors engaged in conducting activities 335 times, while

orchestra directors engaged in the same activity only 128 times by comparison. No significant difference was observed between band and orchestra teachers for classroom management, modeling with an instrument, and modeling without an instrument during student performance.

### **Studies on verbal behaviors of string teachers.**

Salzberg and Salzberg (1981) investigated the role of positive and corrective feedback in the remediation of incorrect left-hand positions of elementary string players. The subjects in this study, five upper strings players in the fourth, fifth, and sixth grades who consistently played with an incorrect left-hand position, received two-minute training sessions on the correct shape of the left hand every time class met (once a week) for four months. During this time, subjects were exposed to one of three interventions: a) corrective feedback delivered approximately once every 30 seconds during the two minute period, b) positive feedback delivered approximately once every 30 seconds during the two minute period, and c) increasingly longer training sessions on the correct shape of the left hand from two to ten minutes with positive feedback delivered four times per minute. Investigators found that while students in this study responded equally well to positive and corrective reinforcement procedures, the largest and most lasting improvement of the left-hand shape was related to the third intervention: prolonged length of the training session on the correct left-hand position and an increased frequency of positive feedback.

Thomas (1989) explored the effect of positive and corrective feedback on students' on-task behavior in a beginning string class. Positive feedback yielded higher

attentiveness than corrective reinforcement, even though negative feedback did not tend to lower attentiveness once attentiveness was established.

Colprit (2003) examined the relationship between Suzuki string teachers' verbalization--including how the teachers articulated targets and directives--and student performance success. Twelve experienced studio teachers of violin and cello submitted their teaching videotapes for further analysis. The investigator reviewed the lessons and identified rehearsal frames as defined by Duke (2000) with the starting point of each rehearsal frame marked by the teacher's identification of a proximal performance goal and the ending of each frame marked when work on the target ceased and the teacher introduced a new target. Colprit found that targets verbalized in terms of physical behaviors (e.g., move the bow faster, move the second finger closer to the first finger, etc.) produced more successful performances with less experienced students, but more experienced students were more successful when the teacher articulated targets in terms of musical outcomes (e.g., make a crescendo here, C sharp needs to be higher, etc.).

### **Studies on teaching strategies used by string teachers.**

It has been suggested that the topic areas addressed most in string education were teaching strategies for the development of playing techniques and skills, performance practices, and information resources (Kantorski, 1995). A number of the studies on teaching strategies in strings pertained to the teaching techniques for the development of students' playing techniques and skills (Bergonzi, 1997; Gillespie, 1988, 1991, 1993; Jensen, 1990; Kantorski, 1986; Kantorski & Elsworth, 1988; Nelson, 1980; Smith, 1985, 1995), and some were concerned with string teachers' behaviors in rehearsal settings

(Elsworth, 1985; Erwin, 1993; Kotchenruther, 1999). The first two studies reviewed below are concerned with the teaching strategies used for the development of the students' right hand playing techniques and skills (Gillespie, 1988; Jensen, 1990), and the next two are concerned with the development of left-hand techniques and skills (Bergonzi, 1997; Smith, 1985). The last two studies reviewed below investigated teaching strategies, such as *performance approximation* and *physical positioning* (Duke, 1999) and *proximal positioning* (Gholson, 1998), that were observed in the studios of several acclaimed private studio string teachers.

Gillespie (1988) investigated two different bow holds (conventional at the frog and balance-point hold) on the development of spiccato bowing. The results indicated that a balance-point approach, in which students first hold the bow at the balance point and then gradually move their bow hands to the frog, yielded better understanding among students for proper execution of spiccato bowing. Later, Jensen (1990) investigated which of the three commonly used strategies for teaching bow-hold (traditional, thumb placed under the frog, and the bow-hold at the balance point) was most effective in supporting the development of proper bow-hold and in improving bow-hand shape among beginning string students. Twenty-four university students enrolled in a beginning string technique class were divided into three experimental groups, and after six weeks subjects were rated on bow-hand shape, bow placement, elbow flexibility, tone quality, bow strokes of different articulations, and control of speed. He concluded that subjects who first learned the traditional bow-hold had a superior hand-shape in comparison to the two other groups, while the subjects who first learned the bow-hold at the balance point had a significantly better hand-shape in comparison to those who initially placed the

thumb under the frog. No significant difference was found between bow-hold and other dependent variables in this study. Both studies discussed the implications of the findings for string teachers.

Bergonzi (1997) investigated whether placing markers a major second and a perfect fourth above the open string on the instrument's fingerboard (functioning much like frets on a guitar) for beginning string students would aid left hand position as well as intonation accuracy. He randomly assigned a group of 68 sixth-grade, beginning string students to a “finger marker” or a “no finger marker” condition. The students were all in the same class; thus, the students were taught by the same teacher, and they were all taught by the same methods. At the end of the 34-week experiment, Bergonzi reported that the students with finger markers performed significantly more in tune than those without markers on both sight-reading and performing prepared pieces.

Smith (1985), on the other hand, found no significant effect of the use of finger markers on the development of intonation accuracy of university music students enrolled in string technique classes. Both studies cautioned string teachers to resist freely incorporating the results of their studies in their teaching as both studies had limitations.

Several studies investigated a variety of teaching strategies that private string instructors employ in their studios. Duke (1999) investigated the teaching styles of a group of nationally and regionally acclaimed Suzuki teachers with specific attention given to different behavioral aspects of the teachers and students. The study defined two types of teaching behaviors or strategies present in Suzuki private studios, *performance approximation* and *physical positioning*. *Performance approximation*, which occupied



9% of the instructional time observed in this study, was defined as any performance of rhythm or pitch that was not performed on a string instrument, including singing, clapping, counting, conducting, and any other means of producing musical sound or movements. *Physical positioning*, which occupied 13% of the instructional time observed in this study, was defined as a teaching strategy in which the teacher touched or nearly touched the student or instrument in order to change something the student was doing or to indicate what the student should be doing. Similarly, Gholson (1998) observed, documented, and analyzed teaching practices of renowned violin pedagogue Dorothy DeLay as they occurred in the natural setting of her Julliard studio. The strategy of *proximal positioning*, that is, the teaching practice that considers the adjustments that a teacher makes in order to assist a student through zones of proximal development, dominated the educational environment DeLay created.

### **Studies on teaching musical concepts in strings.**

Today's music teachers face a daily challenge to teach students not only performance-oriented techniques and skills, but also knowledge and understanding of musical concepts (e.g., rhythm, melody, harmony, etc.) and creativity as outlined in the MENC National Standards for Music Education (Music Educators National Conference, 1994). As a result, several new approaches that emphasize teaching musical concepts, improvisation, and composition have appeared in recent decades, one of them being *Discipline Based Music Education* (DBME). Additionally, the National Standards for Music Education and the ideas of newer approaches to teaching music have influenced string curricula and the content of methods books. The three studies reviewed below are concerned with teaching strings in accordance with the National Standards for Music

Education (Allan, 1995; Riveire, 1998; Townsend, 1999) and two are concerned with conceptual teaching in strings (Hendricks, 2010; Wentworth, 1977).

The National Standards for Music Education outline nine content and achievement standards for music students of all ages. Because of the broad design of the standards, teachers may feel uncertain how to implement the standards in their teaching. In his article on use of the National Standards for Music Education, Allan (1995) provided an overview, explanation, and several suggestions on how to incorporate each of the nine standards in string classes. Riveire (1998) investigated the incorporation of the National Standards for Music Education in string classes with particular interest being placed on the implementation of the third National Standard for Music Education (improvising melodies, variations, and accompaniments). The results of surveys from 158 randomly-selected string teachers revealed highly positive attitudes, but somewhat lower confidence, in teaching and performing improvisation among participants. A moderate correlation was found among a high attitude rating, a high self-confidence in performance skills, and teaching improvisation techniques. Inadequate preparation to teach improvisation and limited class time were the reasons most often given by teachers who did not emphasize improvisation in their classes.

The National Standards for Music Education and newer trends in music education suggest that all students should have instruction which balances performance, improvisation, and composition with music history, aesthetics, and music criticism. The Discipline Based Music Education (DBME) is a music teaching approach embodied in the National Standards for Arts (Consortium of National Arts Education Associations, 1994) that proposes that every piece of music should be studied from four aspects: (a) a

performance aspect, (b) an aesthetic aspect, (c) a historical aspect, and (d) a critical aspect. The approach was established at the Invitational Conference on Discipline Based Music Education held in Chattanooga in 1992 and has since been sponsored by the Getty Center for Education in Arts and the Southeast Center for Education in Arts (Reimer, 1991).

Townsend (1999) investigated the effect of the DBME on establishing the conceptual framework for helping students to attain the 18 proficiencies stated in the Indiana 1994 Music Curriculum Guide. Of particular interest to his study was the use of DBME components within much of the examined curricula and the relationship between the DBME approach and the attainment of the proficiencies that are described in the Indiana 1994 Music Curriculum Guide. The findings of the study suggested a positive relationship between this approach and the students' attainment of proficiencies as outlined in this guide.

Not only did the National Standards for Music Education prompt the emergence of new approaches to teaching music, but they also encouraged changes in method books. The review of several of the recently published, most commonly used method books in string classes (*Advanced Techniques for Strings*, 2000. Allen, Gillespie & Tellejohn-Hayes, 2000; *Artistry in Strings*, Book 2, 2003. Frost, Fischbach & Barden) revealed that these books present students not only with exercises for the development of their playing skills, but also with more concept-oriented materials. For example, these method books provide not only exercises and written explanations of playing techniques and skills, but also informational sections about the composers and musical eras as well as suggestions on incorporating the National Standards for Music Education in daily lessons.

### **Studies on conceptual teaching in strings.**

Of particular interest to the present study was the amount of time orchestra teachers engage in conceptual teaching, operationally defined as the verbal behavior that “attempts to make students aware of, have an understanding of, and/or be able to transfer any musical concept” (Blocher et al., 1997, p. 457). This kind of teaching stimulates more than just knowing and memorizing; it encourages appropriately transforming and using knowledge, the cognitive skills that are considered to be “higher-level thinking skills.”

While no study on conceptual teaching as a teaching strategy in strings has been conducted to date, in his review of research in strings teaching and performance, Nelson (1983) raised the following questions in regard to conceptual learning: “How and when can technical learning on a string instrument be balanced with conceptual learning?” and “What effect does the physical and mental maturation of children have on their technical and conceptual learning abilities?” (Nelson, 1983, p. 45). The three studies reviewed below (Hendricks, 2010; Nelson, 1984; Wentworth, 1977) are concerned with approaches and methods that incorporate conceptual teaching.

Wentworth (1977) developed a comprehensive instructional program for beginning string classes that emphasized not only the development of playing skills but also the formation of musical concepts. Along with the acquisition of playing skills, students were taught to compose and analyze musical pieces that they performed. Wentworth found that students exposed to this instructional method not only mastered kinesthetic skills at rapid rate, but also acquired an increased awareness of the elements of music.

Nelson (1984) investigated the applicability of Piaget's principle of *conservation* to rhythmic conservation among young instrumentalists. The subjects in this study were 20 Suzuki violin students ages 4-8. All students had been trained in the Suzuki violin method for at least one year, and all students were proficient in playing and aural recognition of the first three rhythmic variations of "Twinkle, Twinkle, Little Star" (Suzuki Book 1). During the experiment, the students were presented with a visual representation of each rhythm, and they were trained in several review sessions to make a connection between what they played/heard and the visual representation of the rhythm. All participants were able to match the familiar rhythm with a visual representation correctly. However, when the investigator slightly changed the aural presentation or the visual appearance of the rhythmic pattern (e.g., playing the same rhythmic pattern but with different pitches, or simply turning stems on the visual representation in the opposite direction), only the older children were able to guess the rhythm correctly, even in instances when the older children had less training than the younger children. Nelson concluded that the training level of the students appears to be less important in students' ability to conserve rhythm than the students' age. He also concluded that children pass through definite stages of meter conservation, a finding consistent with Piagetian conservation investigations in other domains.

In a more recent study, Hendricks (2010) observed the influence of two different teaching strategies on a student string quartet members' motivation, engagement, and expressive performance. The investigator taught the first movement of Schubert's "Death and the Maiden" Quartet (D810) to her high school string students using performance-based instruction only, while the second movement was taught with a combination of the

performance-based approach and music history and music theory lessons. Based on the students' comments and the teacher's observations, the investigator concluded that the incorporation of music history and music theory lessons into performance-based instruction motivated students, inspired a more expressive performance, and improved the effectiveness of rehearsal time.

### **Review of Studies on the Use of Time in Music Education Settings**

Out of over 1,000 hours of instructional time per year, which is mandated by most states, only 300 or 400 hours are spent on academic learning (Mignano & Weinstein, 2003). Much of the mandated time is lost through students' absences, interruptions, late starts, recess, lunch, and transitions (Karweit & Slavin, 1981). Studies examining the relationship between time and learning indicated a significant positive correlation between the time spent on content and student learning (Berliner, 1988).

Research in music education addressed the use of time in a variety of musical environments: elementary music classes (Forsythe, 1977; Moore, 1981, Orman, 2002; Wagner & Strul, 1979), choral and instrumental ensembles (Brendell, 1996; Caldwell, 1980; Goolsby, 1996; Madsen & Geringer, 1983; Strauser, 2008; Watkins, 1993, 1996; Witt; 1986), and applied lessons (Colprit, 2000; Duke, 1999; Kostka, 1984; Siebenaler, 1997). Most of these studies investigated the use of time in correlation with another variable, such as teaching experience or geographical location of participants.

Although there are some variations in the findings collected in elementary music settings, the general conclusion is that elementary music specialists spend the most time on teaching, less time on students' performances, and the least time on "getting ready"

activities (Forsythe, 1977; Moore, 1981). Studies done in secondary choral and instrumental settings revealed the opposite tendency: most of the instructional time during ensemble rehearsals is spent on performance, followed by teaching episodes and “getting ready” activities (Goolsby, 1996; Witt, 1986). Several studies done in applied lesson settings revealed that most of the time used in applied lessons consists of the teacher's verbalizations and student performances (Colprit, 2000; Duke, 1999).

### **Studies on use of time in elementary music education settings.**

The three studies reviewed below were all conducted in elementary music education settings and were concerned with the use of class time. They were selected for a more detailed review either because they are widely cited in music education research that is concerned with use of time in elementary music classes (Moore, 1981; Wagner & Strul, 1979), or because they are concerned with use of time in relationship with newer trends in music education (Orman, 2002).

Wagner and Strul (1979) compared the time employed in different music classroom activities by elementary music teachers at three levels of their careers: experienced teachers ( $N = 9$ ), teaching interns ( $N = 9$ ), and undergraduate music education students ( $N = 9$ ). Each teacher was observed twice during fifteen-minute segments of two elementary music classes in nine elementary schools. The use of time and the number and kind of reinforcements used by elementary music teachers was quantified by Moore's (1976) *Music Teaching Reinforcement-Activities Form* (MTRA). The MTRA was designed to categorize teaching behaviors and to quantify teacher's feedback. The only significant difference found among the teachers for fourteen proposed

teaching activities was on the amount of time used for giving directions (the teacher explaining the rules and assignments). The investigators found that experienced teachers spent significantly less time on giving directions compared to the other two groups in this study. Researchers also assessed the students' attitude toward the music class by administering a nonverbal attitude assessment (picture/symbol) to each student after each class. This assessment indicated that students in the classes of all three groups of teachers felt equally happy to participate in music classes and were pleased to spend time pursuing music-related activities.

Moore (1981) studied thirty British ( $n = 30$ ) and thirty American ( $n = 30$ ) elementary music specialists with equal years of teaching experience. He compared their use of teaching time on instruction, preparation, talking, discussion, singing, listening, rhythmic movement, writing music, and playing instruments. Teachers were videotaped for 20 minutes during regularly scheduled music classes. Observers watched videos and recorded data on the *Music Teaching Interactions-Activity Form* (MTIA), which allowed them to record the frequency of and length of time on specific behaviors throughout continuous teaching episodes. The findings in this study revealed no significant difference between British and American music teachers on any of the proposed variables; however, the results indicated that the American music specialists used more rhythmic activities and movement during the class, while the British specialists spent more time in singing. That there are only a few differences in how American and British elementary music teachers use classroom time appears to be even more interesting if one takes into consideration the differences in culture, customs, and nationalistic music styles of the two groups.



Orman (2002) examined the time elementary music specialists spent in teaching each of the National Standards for Music Education. Thirty elementary music specialists ( $N = 30$ ) teaching students in grades 1 through 6 were videotaped, and the videotapes were analyzed by two independent observers during two separate sessions. During the first session, observers focused on collecting data regarding the use of time spent on common classroom activities (e.g., talking, singing, getting ready, movement, etc.), and during the second session, observers focused on collecting data regarding the use of time spent on the National Standards for Music Education. Aside from finding that the largest proportion of time in elementary music classes was spent on talking (46.36%), followed by modeling (21.57%), Orman also found that singing, playing instruments, and reading/notating were the most prevalent national standards addressed across all six grade levels, followed by listening/analyzing, and that the remaining five standards—standards that require creativity or artistic decision-making such as improvising, composing and arranging, and evaluating musical performance—composed less than 5% of the total class time.

### **Studies on use of time in secondary music education settings.**

While studies on the use of time in elementary music classes show that most of the time is used on the teachers' talk, studies on the use of time in secondary and college choral and instrumental music classes revealed the opposite pattern. In secondary music classes, more time was used on performance than on instruction (Brendell, 1996; Caldwell, 1980; Carpenter, 1989; Goolsby, 1996; Hendel, 1995; Madsen & Geringer, 1983; Schmidt, 1985; Spradling, 1985; Strauser, 2008; Watkins, 1993, 1996; Witt, 1986; Yarbrough & Price, 1981, 1989). Interestingly, several studies that investigated the

correlation between performance time and the effectiveness of instrumental music teachers (Ellsworth, 1985) found no positive correlation between the two variables. Moreover, several studies found that the time spent on performance preparation was not necessarily improving the quality of the students' performance (Siebenaler, 1997; Speer, 1994; Yarbrough & Price, 1981, 1989; Younger, 1998). Rather, it was suggested, higher levels of teacher activity (more rapid exchange between teacher and student behavior) led to a higher quality of student performance (Siebenaler, 1997; Younger, 1998).

The four studies reviewed below are all concerned with the use of time in secondary music education settings. These studies were chosen for a more detailed review either because they appear to be widely cited in music education research literature that was concerned with the use of time in secondary music classes (Goolsby, 1996; Goolsby, 1999) or because they were concerned with the use of time in relationship to the development of students' higher-level thinking skills (Watkins, 1993, 1996).

In a widely cited study, Goolsby (1996) compared the use of time among three groups of middle and high school band teachers: student, novice, and experienced teachers. The investigator recruited 30 ( $N = 30$ ) band directors at the secondary level, ten ( $n = 10$ ) in each level of experience, and videotaped three of their regular rehearsals over the period of four months. Fourteen selected and time-related variables were measured in real time using a series of stop watches. Goolsby found that experienced teachers spent significantly more time on musical instruction and performance (80.6%) in comparison to novice teachers (67.3%) and student teachers (76.9 %). Experienced teachers also used more than twice as much time on performance than on verbal instruction; they spent more

time on warm-up and in nonverbal instruction and modeling, and they engaged the ensemble in tasks more quickly than the teachers in the two other groups.

In a follow up study, Goolsby (1999) compared the use of time by expert and novice teachers when preparing an identical band composition. The participants in this study were ten ( $n = 10$ ) expert and ten ( $n = 10$ ) novice middle and high school band teachers teaching an identical piece of music to comparable groups of students. The video recordings of all rehearsals from the initial sight-reading to the final performance were analyzed for the use of time on concert preparation and organization of rehearsal time. As expected, Goolsby found that novice teachers used more time to prepare the assigned piece of music than the expert teachers. Still, the performances conducted by the expert teachers were evaluated to be superior to those of novice teachers. While there was no difference in the use of time on nonteaching activities, the two groups of teachers differed in regard to the use of time on verbal instruction. Novice teachers used 44% of the time on verbal instruction while expert teachers used 32% of the time. The most revealing finding of this study was that the novice teachers stopped and restarted the rehearsal without providing instruction with much greater frequency than the expert teachers.

Watkins (1993) investigated the allocation of time for various nonperformance activities during middle and junior high school (grades 6 through 8) choral rehearsals, with a particular interest placed on the percentage of nonperformance time middle and junior high school choir directors spent in attempting to develop students' "higher-order thinking skills, that is, analysis, synthesis, and evaluation of both musical content and performances" (Watkins, 1993, p. 5). She was also interested in knowing whether there was a correlation between teaching experience and the percentage of time used in

attempting to develop students' higher-order thinking skills. The researcher analyzed the video recordings of 29 middle and junior high school choral rehearsals, which were videotaped at 15-minute intervals after all preparatory and sight-reading activities had been accomplished. Data were collected through time sampling of videotaped choral rehearsals, and each nonperformance activity was analyzed with respect to frequency and time. Watkins reported that overall, 40.4% of the “choir after business” time was spent on nonperformance activities, which included any rehearsal activity not spent in performance, such as expository verbal modes, modeling, questioning for lower-order thinking, questioning for higher-order thinking, students responding, nonspecific verbal modes, and silence. Within this time, 33.86% accounted for the expository verbal mode, modeling, and questions to elicit identification, comprehension, and simple comparison (lower level thinking skills), 5.7% of the nonperformance time was spent on nonspecific verbal activities, and only slightly less than 1% of the rehearsal time was spent in the attempt to develop students' higher-order thinking skills. No relationship was found between years of teaching experience and the amount of time spent on the development of higher-order thinking skills.

Watkins (1996), who replicated her earlier study with high school directors, found that at the high school level overall, choir directors spent a little less time on nonperformance activities (38.60%). Within that time, most of the time was engaged in expository verbal modes, modeling, and questioning for lower level thinking skills (34.30%), followed by the time used on nonspecific verbal activities (3%), and again, the least amount of time (1.30%) was spent on an attempt to develop students' higher-order thinking skills.

## **Review of Studies on Verbal Teaching Behaviors in Music Education Settings**

Two main activities observed in music classes are student performance and teacher talk (Carpenter, 1988; Duke, 1999; Colprit, 2003; Goolsby, 1996; Hendel, 1995; Schmidt, 1989). In general, research shows that across a variety of music education settings, students at the secondary level perform for approximately half of the total time (Caldwell, 1980; Hendel, 1995; Madsen & Geringer, 1983; Schmidt, 1989).

In addition to student performance, verbal behaviors are the second most observed behavior in classes taught by secondary music teachers. The results of the studies that focused on measuring the overall amount of time teachers spent on verbal behaviors in music classes are inconsistent. While some studies reported that more than 50% of applied lesson and ensemble rehearsal time was spent on teacher talk (Buckner, 1997; Carpenter, 1988; Colprit, 1997, 2000; Duke, 1999; Kostka, 1984; Yarbrough & Price, 1981, 1989), other studies hold that verbal usage occupied less than 50% of the total instructional time (Caldwell, 1980; Strauser, 2008; Thurman, 1977). The general conclusion of these studies was that expert teachers talk for shorter time intervals (approximately five seconds), and that their talk usually occurs right after students' performances (approximately ten seconds after the performance) (Buckner, 1997; Cavitt, 1998; Siebenaler, 1997).

The analysis of the content of verbal teaching behaviors revealed several patterns. Teachers give information and directives (Byo, 1990; Byo & Austin, 1994; Duke & Madsen, 1991; Madsen & Geringer, 1983), and they ask questions and deliver feedback (Buckner, 1997; Duke & Henninger, 2002). Sometimes teaching and learning occur in

the cycle of a *sequential pattern* that usually includes three verbal steps: a) the teacher's academic presentation of a task, b) the student's response, and c) the teacher's reinforcement (Arnold, 1995; Bowers, 1997; Goolsby, 1999; Hendel, 1995; Speer, 1994; Yarbrough & Price, 1981, 1989; Yarbrough & Hendel, 1993; Yarbrough, Price & Hendel, 1994; Price, 1989, 1992).

The seven studies reviewed below are all concerned with verbal behaviors of secondary music teachers. These studies were selected for a more detailed review because they were investigating the use of time on verbal behaviors in secondary music classes (Caldwell, 1980; Goolsby, 1997), because they were concerned with verbal feedback (Droe, 2008; Duke & Madsen, 1991), or because they were concerned with the content of verbalization among secondary music teachers (Hanna, 2007; Strauser, 2008).

#### **Studies on the use of time on verbal behaviors.**

Caldwell (1980) investigated teaching behaviors and the time allotted to these behaviors by successful high school choir directors. A panel of experts viewed videotaped rehearsals and determined that “successful” choir directors devoted 65% of their time to conducting or monitoring rehearsal trials and 35% to verbal behaviors. Further analysis of the content of verbal behaviors among participants revealed that music instruction used 55% of the time, illustration used 21% of the time, and evaluation used 24%.

The primary purpose of the Goolsby (1997) study was to investigate the verbal instruction used by experienced, novice, and student teachers. The rehearsals of the thirty participating band directors were analyzed for the use of time on verbal instruction,

nonverbal modeling, verbal discipline, and performance. The results revealed that student teachers used 35.4% of instructional time on verbal instruction, while novice teacher used 26.6% of time on the same behavior. At the same time, experienced band directors used the least amount of time on verbal instruction, 24.1%. All three groups of teachers addressed rhythm/tempo most frequently in their verbalization. Goolsby also concluded that experienced band teachers use significantly more time on performance (51.2%), nonverbal modeling (5.4%) and warm-up activities (20.6%) than the other two groups. Another purpose of this study was to measure the percentage of complete sequential patterns of instruction. While experienced teachers used complete patterns for slightly over 20% of the total rehearsal segments, the student teachers and novice teachers used complete patterns in less than 14% of the rehearsal segments. It merits noting that the percentage of complete patterns of instruction used by undergraduate students nearly tripled with minimal training.

### **Studies on verbal feedback.**

Not only do teachers use verbalization to convey information, but they also use it to reinforce learning objectives through delivering positive and sometimes negative or corrective feedback (Duke & Henninger, 2002; Forsythe, 1977; Kostka, 1984; Moore, 1976; Rutkowski & Miller, 2003; Salzburg & Salzburg, 1981; Sogin, 1997; Yarbrough & Price, 1989). According to Carpenter (1988), “Teachers are inclined to be specific when giving disapproval and more likely to be general when giving approving feedback” (Carpenter, p. 37). Yarbrough and Price (1989) found that experienced teachers were highly disapproving of student responses, while preparatory teachers who participated in the same study were highly approving. In addition to changing students' behavior, it

appears that teachers' feedback may play a role in shaping students' musical tastes. Droe (2008) found that a teacher's approval or disapproval of the music at hand might have a significant influence on middle school band students' music preferences.

Despite evidence that specific and positive approval encourages student attention and positive attitudes (Duke & Madsen, 1991; Price, 1983), music teachers--particularly in secondary-level performance classes--are found to be more disapproving than approving (Carpenter, 1988; McCoy, 1985; Price, 1989). Interestingly, a higher percentage of negative feedback delivered in secondary-level performance classes does not adversely affect students' attentiveness (Carpenter, 1988; Duke & Henninger, 2002; Yarbrough & Price, 1981,1989), an effect that is yet to be empirically examined (Duke,1999).

The purpose of Duke and Madsen's study (1991) was to investigate the effect of two instructional sequences (*non-hierarchical* and *hierarchical*) on the accuracy of students' performance, the relationship between the percentage of specific and non-specific approving and disapproving verbal feedback, and the students' progress from one instruction to the next. The proportion of correct versus incorrect student responses was significantly different between the two learning sequences. The students in the *hierarchical* instructional sequence (a detailed, twelve-step task hierarchy for teachers to teach the terminal objective) performed accurately in 87% of the performance trials, whereas students taught by a *non-hierarchical* instructional sequence (no specific instructional steps on how to teach the terminal objective) performed accurately in 76% of the trials. Across both conditions, specific verbal approval occurred in only 7% of teacher feedback intervals, and nonspecific disapproval comprised less than 4% of total



teacher feedback. The researchers suggested that in order for teachers to be able to give more approving feedback, learning situations must be structured in a way that improves a student's chance for success (*proactive teaching* through detailed, planned sequencing versus *reactive teaching*).

### **Studies on content of verbalization.**

Several studies focused on the content of verbalization in regard to higher-order thinking skills as defined in Bloom's Taxonomy of Cognitive Domains (Bloom et al., 1956). In her article on the revision of Bloom's Taxonomy (Anderson & Krathwohl, 2001), Hanna (2007) explained the revised taxonomy as a tool to translate music education outcomes into objective educational criteria as prescribed by the National Standards for Music Education. For example, she matched "singing" (National Standard 1) with the cognitive level of "apply a skill," and she matched "analyzing music" (National Standard 6) with the cognitive level of "analyze a fact." Of the Nine National Standards, National Standard 6 (listening to, analyzing, and describing music), National Standard 7 (evaluating music and music performances), National Standard 8 (understanding the relationship between music, the other arts, and disciplines outside the arts), and National Standard 9 (understanding music in relation to history and culture) all call for understanding of terminology, explanation, discussion, and other forms of verbal communication between music teachers and their students. Not only do these national standards call for advanced forms of verbal communication, they also engage students in higher level thinking skills, such as analysis, evaluation, and creativity.

Strauser (2008) examined the content of verbalization in choral rehearsals in relationship to Bloom's higher levels of thinking. Participants in this study were six expert high school choir directors whose rehearsals were audio-recorded at the beginning, middle, and end stages of performance preparation. The directors' language was classified by type of activity. Language containing cognitive content was further categorized using the revised Bloom's taxonomy. Strauser reported that student performance occupied 44% of rehearsal time and teacher talk 47%. Further analysis of the teachers' talk revealed that 26% of the talk involved task presentation, with 2.4% on questioning, and 2.5% on specific feedback. The cognitive content was split almost evenly between lower levels of thinking (remember, understand, apply) and higher levels (analyze, evaluate, and create). Strauser reported that minimal instructional time (4.3 %) was spent on verbalization that engaged students in conceptual thinking.

## **Review of Studies on Nonverbal Teaching Behaviors in Music Education**

### **Settings**

In addition to the verbal behaviors described above, music teachers employ various kinds of nonverbal strategies to convey warmth and affection, approval and disapproval, and to influence student behavior and performance all while enhancing teaching effectiveness. Three commonly used forms of nonverbal communication in music classes are musical modeling, aural modeling, and physical modeling (Tait, 1992). Musical modeling includes the teacher providing a total image of the desired musical outcome either vocally or on an instrument. Aural modeling is when a teacher employs phonetic vocalization, including humming or syllables, in order to convey particular

points of the desired performance, or when the teacher simply allows students to listen to the recorded performance of a piece of music. Physical modeling typically includes conducting, physical gestures, and facial expressions.

### **Studies on musical modeling.**

Rosenthal (1984), Rosenthal, Wilson, Evans and Greenwalt (1988), Sang (1987), Dickey (1991), Henley (2001), and Mann (2008) examined the effectiveness of musical and verbal modeling--alone and in combination with other teaching techniques--on students' performances. All the studies found that direct musical modeling without additional verbal explanation had the strongest effect on improving students' performances.

Dickey (1991) investigated the effect of modeling with verbal instruction versus modeling without verbal instruction in middle school band classes on the development of the students' kinesthetic and ear-to-hand skills, as well as on the students' musical discrimination skills. Students in the verbal group received verbal responses from the instructor to help them identify a specific music problem. Students in the nonverbal group solved a musical problem through student, teacher, and group modeling. Students in the nonverbal group displayed a significant difference in the kinesthetic measures and ear-to-hand skills while no significant difference was found in the development of musical discrimination between the two groups.

In her study with 44 graduate and upper level undergraduate students majoring either in wind or brass instruments, Rosenthal (1984) examined the effect of aural and verbal modeling on the students' ability to perform a musical selection accurately. She set

four modeling conditions: (a) a guided model (both aural and verbal), (b) an aural model by itself, (c) a verbal explanation by itself, and (d) practice only. Subjects in the aural model group attained significantly superior scores in comparison to the other experimental groups on correct notes, rhythm, dynamics, and tempo while no significant difference was observed on phrasing/articulation.

Henninger, Flowers, and Council (2006) examined the effect of the teacher's musical and aural modeling on the students' progress on instruments and on the improvement of their performance quality in an introductory applied lesson. The participants were nine experienced teachers and fifteen pre-service teachers, all teaching a simple and familiar song on wind instruments to beginning students. The lessons were videotaped and subsequently analyzed for teaching behaviors and student achievement by using *SCRIBE*. Experienced teachers provided more feedback (both approving and disapproving); they modeled less, and their students talked more. While pre-service teachers in this study modeled significantly more on their instruments than experienced teachers, their students' progress and performance quality was rated lower than the progress and performance quality of students taught by experienced teachers.

### **Studies on aural modeling.**

Yet another form of modeling applicable in music classes is aural modeling. Rosenthal (1984) and Rosenthal et al. (1988) investigated the effect of aural modeling on the performance of advanced university instrumentalists and concluded that listening to a model alone, even without an opportunity to practice, may be as effective as practicing

with the instrument when it comes to the development of performance skills among advanced players.

Hewitt (2001) investigated the effect of aural modeling as a practice technique on instrumentalists' music performance and attitude. The subjects in this study were brass, woodwind, and percussion high school students placed in eight groups that received varying amounts of aural modeling, self-listening, and self-evaluation. The students who listened to professional recordings during the study's period increased their overall performance skills in the following categories: rhythmic accuracy, tempo, tone, technique, articulation, and performance.

### **Studies on physical modeling and conducting.**

Physical modeling as a form of nonverbal behavior in music classes is often conveyed through gestures, facial expression, and conducting. A number of studies investigated the role of conducting in presentation of a piece of music and shaping the learning of students (Acklin, 2009; Byo & Austin, 1994; Menchanca, 1988; Price, 1983; Vallo, 1990; Worthy, 2006; Yarbrough, 1975).

The primary purpose of Acklin (2009) study was to provide an overview of experimental and descriptive research within the field of conducting. The secondary purpose of her study was to examine the effect of conducting on ensemble performance through the meta-analytic techniques of “best-evidence” synthesis. Twenty-three studies, divided into five categories, met the inclusion criteria. Results from studies examining expressive versus non-expressive conducting on the impact of ensemble sound were mixed. While some reviewed studies suggested that expressive conducting only

influences listener perceptions, other research indicated that specific conducting gestures do, in fact, shape the sound of an ensemble. Other studies examined the effect of conducting in combination with verbal and modeling rehearsal techniques. Conducting gestures were effective, but only within a combination of other rehearsal techniques, suggesting that many skills define conductor competencies. Lastly, several studies were examined to explore the synchronization between conductor and ensemble members. Results suggest that musicians with previous conducting experience maintain steadier tempi while following a conductor than musicians without conducting training.

The purpose of the Menchanca (1988) study was to observe, categorize, and summarize musical instruction behaviors of secondary school conductors. In addition, he sought to determine if any relationship exists between these behaviors and students' attitudes. Menchanca concluded that secondary school conductors use verbal instruction most often when problem-solving musical behaviors, and that they address fundamentals/pitch, rhythm, tempo, articulation, and dynamics more frequently than expressive elements of music or pedagogical elements of the performance. However, expressive and pedagogical elements when verbalized by conductors were a predictor of a better attitude in students.

Yarbrough (1975) and Madsen, Standley, and Cassidy (1989) studied the effect of the magnitude of a conductor's nonverbal behavior on the performance, attentiveness, and attitude of students in mixed choruses. Yarbrough (1975) also researched the effect of conductor magnitude on the performance, attention, and attitude of mixed choruses. Conductor behaviors were categorized as regular, low, or high magnitude, defined by eye contact, closeness, volume and modulation of voice, gestures, facial expressions, and

rehearsal pacing. Subjects ( $N = 207$ ) were students from 4 mixed choruses who participated in a 16 minute rehearsal and performance. Results revealed no significant differences in the performance, attention, or attitude from the three conducting behaviors; however, the high magnitude conductor had the highest percentage of on-task student behavior and greatest student preference.

In contrast, Madsen et al. (1989) suggested that intensity might be an important attribute of effective music teaching. Researchers also suggested that students learned quickly, retained what they learned, and were able to transfer their learning to another learning setting when teachers appropriately linked teaching strategies to instructional goals, as well as to the learning needs of every student.

### **Review of Studies on Teaching Strategies in Music Education Settings**

Schuell (1988) proposed six types of musical knowledge: (a) propositional knowledge (verbal knowledge), (b) psycho-motor knowledge (performing skills), (3) images (aesthetic implication of music notation), (c) aural knowledge (ability to think in sound), (d) attitudes (knowledge of how to practice), and (e) emotional knowledge (intuitive knowledge). If, indeed, types of musical knowledge differ, the ways of teaching musical knowledge or teaching strategies should vary as well.

Teaching strategies have to do with “how” to teach. Unlike methods that follow a systematic plan in presenting instructional materials, strategies represent actions and reactions that are flexible enough to address the learning needs of various students and that may be unique to a certain teacher or situation (Tait, 1992). An examination of the literature on teaching strategies in music education settings indicates that music teachers

utilize different teaching strategies to support the development of students' musical and cognitive skills (Price, 1989; Teabel & Coker, 1980).

The previous portion of this review described teaching strategies that involved various forms of verbal and nonverbal teaching behaviors. The following portion will describe teaching strategies that involved a complex choice of sequencing such as *sequential patterns* (Arnold, 1995; Bowers, 1997; Speer, 1994) and teaching strategies that attempted to balance the acquisition of performing skills with musical knowledge such as *comprehensive musicianship* (Garafalo & Whaley, 1978; Hendricks, 2010; Sindenberg, 2007).

#### **Studies on sequential patterns.**

According to Yarbrough and Price (1989), when compared to other research-based teaching strategies in various academic areas (e.g., the open classroom model, the cognitively oriented curriculum model, the behavior analysis model, etc.), *direct instruction* as established by Rosenshine (1976) is superior in terms of student achievement, cognitive understanding, and positive attitude toward learning. This model, known to music educators as a *sequential pattern*, has been the subject of numerous studies (Duke & Madsen, 1991; Jellison & Wolfe, 1987; Moore, 1981; Price, 1983, 1989, 1992; Single, 1991; Spradling, 1985; Yarbrough & Hendel, 1993; Yarbrough & Price, 1981, 1989) on its use and effectiveness in music classrooms.

Price (1983) investigated the effect of conductor task presentation, reinforcement, and practice on students' overall musical achievement, attentiveness, and attitudes.

Participants in this study (university symphonic band students) rehearsed under three



experimental conditions: Treatment A gave the directions followed by performance; Treatment B gave the musical task presentation followed by directions and interaction with the task via performance; and Treatment C gave the task presentation, directions, and performance followed by a reinforcement of the task. While all three treatments resulted in positive gains in musical achievement, Treatment B resulted in the smallest gain, and Treatment C produced the largest gains. The student attitudes toward the class were significantly related to the music, the conductor, and their interaction. Students' ratings of the rehearsal and the conductor as a good teacher were significantly related to the treatment, with Treatment C rated the highest.

Yarbrough and Price (1989) examined the use of instructional time in several music education classes in relationship to *sequential patterns* that involved three steps: (1) academic presentations of a musical task, (2) student response, and (3) teacher reinforcement. The subjects in this study were freshman music education majors ( $n = 30$ ), sophomore music education majors ( $n = 19$ ), experienced instrumental music teachers ( $n = 15$ ), and experienced choral music teachers ( $n = 15$ ). All subjects agreed to be videotaped while teaching a regular rehearsal. In addition to being videotaped, the sophomore students participated in training on the correct use of the *sequential patterns* cycle (all three steps of *sequential pattern* included). The investigators coded the rehearsals into verbatim typescripts and calculated the overall use of time and the use of time on correct and incorrect teaching cycles. The analysis of the overall use of time revealed that the time spent on presenting musical information and appropriate reinforcement was about one-fourth of the total rehearsal time, with an almost equal amount of time spent on giving directions. The remaining half of the instructional time

was used on performance. When time was analyzed in regard to the correct and incorrect sequential patterns, all groups except freshman students spent a greater amount of time on incorrect teaching cycles than correct cycles. Across all groups, more time was spent in the presentation of the task and the student responses than in reinforcement, with sophomore students spending approximately 10% more time presenting musical tasks than any other group. Finding that freshman students used a greater amount of time on correct teaching cycles and that sophomore students (the only group that received the training on correct *sequential patterns*) used more time on presenting musical tasks than any other group suggests that *sequential patterns* and presentation of musical information can be successfully taught.

This study yielded additional important suggestions for researchers and teachers. The least amount of time, across all four groups, was used on reinforcement. Experienced teachers were highly disapproving while preparatory teachers were highly approving. The amount of negative feedback experienced teachers delivered was concerning, and the researchers suggested that it is of paramount importance to develop techniques that would teach experienced and prospective teachers to teach in a proactive way that would reduce the number of mistakes and provide learning outcomes deserving of positive feedback. Given the strength of evidence on the effectiveness of *sequential patterns*, teachers should be trained to use all three steps of complete patterns as only the use of complete patterns may ensure a positive outcome for students' learning.

The purpose of the Speer (1994) study was to investigate the presence of *sequential patterns* in private studios of 25 piano teachers. Audio-recorded lessons were scripted and analyzed for frequency of complete/correct, complete/incorrect, and

incomplete sequential patterns. The results indicated that the largest percentage of time in piano studios was spent on student participation (47.25%), followed by teacher presentation (42.41%), and the least percentage of time was used on verbal reinforcement (6.24%). Similar to the findings of Yarbrough and Price (1989), experienced teachers in this study were more disapproving than other groups of teachers. Unlike the study reviewed above, in Speer's study, the number of complete patterns was relatively high.

### **Studies on *Comprehensive Musicianship*.**

Several music education researchers investigated the ways in which the teachers of performing classes at the secondary level might strike a balance between the acquisition of knowledge about music and the advancement of performing skills (Bess, 1991; Burris, 1989; Garafolo & Whaley, 1979; Sindenberg, 2007; Whitener, 1980; Whitlock, 1981). This manner of teaching is often labeled as *comprehensive musicianship* and involves articulation of the relationship between basic elements of music (e.g., rhythm, melody, harmony, etc.) and historical, social, psychological, and aesthetic dimensions.

In her study, Sindenberg (2007) briefly reviewed the events (Contemporary Music Project, 1963-1969; Manhattanville Music Curriculum Project, 1965-1971; Yale Seminar, 1963; Tanglewood Symposium, 1967) that informed the beginnings of the *Comprehensive Musicianship through Performance (CMP)* project (Lawrence University in Appleton, Wisconsin, 1977). Then she described five components of CMP most commonly referred to as “points of the model” (Wisconsin Music Educators Association, 2007). The five points of the model include music selection, analysis, outcomes,

strategies, and assessment, and their goal is, through performance, to develop an understanding of basic musical concepts: tone, melody, rhythm, harmony, texture, expression, and form. For 30 years, these five points served as a planning framework for music teachers as they attempted to broaden and deepen musical experiences among general music, band, choir, and orchestra students of all ages.

Another study concerned with the principles and use of *comprehensive musicianship* was done by Garafolo and Whaley (1979), who investigated the effect of the *comprehensive musicianship* method on the development of students' understanding of musical concepts as well as their playing skills in a school band environment. The control group utilized traditional rehearsal techniques, while the experimental group used the "Unit Study Composition" curriculum model, which introduced students to structural elements of music, musical style, and the history of the pieces being rehearsed. Results indicated that students exposed to this teaching strategy not only developed a much higher level of understanding with respect to basic musical concepts and aural discrimination but also improved their performing skills significantly.

### **Review of Studies on Conceptual Teaching in Music Education Settings**

The teaching strategy that will be of particular interest to the present investigation is conceptual teaching. Because conceptual teaching emerged out of a cognitive perspective on learning which is considered to be a philosophical orientation and not a unified theoretical model or teaching method, there is no a unified definition of conceptual teaching. For the purpose of this study, conceptual teaching has been operationally defined as "verbal behaviors of orchestra directors in rehearsal settings by

means of which the directors attempt to make students aware of, have an understanding of, and/or be able to transfer any musical concept” (Blocher et al., 1997, p.457). The studies reviewed in this portion of the document will pertain to conceptual teaching in one of two distinct ways as proposed by Froehlich: “(A) Studies on teaching musical concepts, and (B) Studies on conceptual teaching in and through music” (Froehlich, 1992; p. 563). The review of literature on conceptual teaching in and through music will be preceded with an explanation of the subject’s theoretical underpinnings.

### **Studies on teaching musical concepts.**

According to Froehlich, teaching musical concepts entails “the teaching of the knowledge and skills needed to identify organized sound according to its elements” (Froehlich, 1992; p. 563). In this way of teaching, students learn to identify elements of music (e.g., rhythm, melody, harmony, expressive elements of music, etc.) by labeling them, they learn to analyze the form of the piece and to name its parts, and to articulate the relationship between the elements of music and those parts.

Teaching musical concepts first found a strong application in general music classes under the influence and applicability of Piaget's and Bruner's developmental and learning theories, as well as Gary's seminal text, *The Study of Music in the Elementary School - A Conceptual Approach* (Gary, 1967). In addition, the methodologies of Carl Orff, Zoltan Kodaly, Emile Jaques-Dalcroze, which were all influenced by the work of Jean Piaget, and the work of an earlier nineteenth century educational innovator, Johann Pestalozzi, also provided general music teachers with the necessary and developmentally appropriate tools for teaching music to younger students. The major premise for teaching

musical concepts to younger students, according to these three methodologies, is that “child-developmental characteristics in music, rather than the logic of the subject matter” (Choksy et al. 2001, p. 88) should determine the sequence of learning. The following five studies focused on the acquisition of various musical concepts in pre-school and elementary music settings.

In an experiment with a group of fourth-grade students, Palmer (1974) compared the approaches of Gordon and Richards to rhythm reading. While Gordon advocated learning rhythms in small units such as rhythmic patterns, Richardson advocated presenting rhythms in units larger than patterns. Palmer found no significant difference in the acquisition of the concept of rhythm between the two experimental approaches as the post-test results of two groups were comparable. A similar study was conducted by Colley (1987) who investigated the effect of three methods of rhythm reading--Kodaly's method, Gordon's method, and his own self-developed word method (using actual words to represent a rhythm)--with a group of second- and third-grade children. The researcher-designed word method was found to be superior to the other two.

Sims (1986) investigated preschool children's ability to correctly identify the elements of tempo (fast and slow) and articulation (smooth and choppy) in response to listening, movement, and singing activities when the two elements were presented as single or combined entities. The experimental variable consisted of short-term instruction designed to teach the students to respond to the two elements at the same time. The results of this study indicated that while young children were capable of learning to identify and label proposed elements of music with very few errors when elements were presented as single discrimination items, a dramatic difference in scores occurred when

elements were presented as double discrimination entities. The students made significantly more errors when asked to identify both elements presented at the same time, which is consistent with Piaget's theory that young children tend to center on only one aspect of stimulus at a time.

In another study on teaching musical concepts to younger students, Andrews and Deihl (1970) sought to develop and test a technique for measuring elementary school age students' concept of the elements of pitch, duration, and volume. The multi-modal measurement developed for the purpose of this study, called *Battery of Musical Concept Measures*, included two groups of measures: a group of written measures and a group of non-written measures. The written measures asked students to write one word describing the concept; in the non-written measure, students were asked to explain the concept verbally. The investigators concluded that children do perceive differences and changes in music stimuli long before they are able to label those changes appropriately. The recommendation to music educators was that the written group of measures used in this study should be adapted for use with preschool, first-grade, and second-grade students as their motor and cognitive abilities differ. The researchers also suggested that proposed non-written measures may prove to be of particular value to verbally or visually handicapped students and children who have problems speaking or writing.

Teaching musical concepts is not limited only to elementary music classes. While music instruction at the secondary level might emphasize learning music through performance, in recent decades, high school music teachers have been urged to place more attention on balancing performance with conceptual knowledge. Such efforts are often labeled as *comprehensive musicianship*, and several studies on this teaching

strategy have already been discussed in the Studies on Teaching Strategies portion of this review.

**Theoretical background of conceptual teaching and review of studies on conceptual teaching in and through music.**

Much less research exists on the second approach to conceptual teaching, known as “conceptual learning in and through music.” This way of teaching is concerned with complex cognitive processes that lead to understanding, and it encompasses teaching strategies and techniques that encourage the development of students' problem solving skills, transfer of learning skills, and creativity, all known as higher-level thinking skills. The theories of three cognitive theorists whose work informed conceptual teaching will be reviewed below.

*Theoretical background of conceptual teaching: Piaget, Bruner, and Bloom.*

There are two theories that serve as the basis for the studies on conceptual teaching in and through music: Piaget’s theory of cognitive development, and Bruner’s theory of conceptual teaching/learning. Also, since the present study is concerned with middle and high school students—at an age when their ability for higher processes of thinking rapidly grows—Bloom’s taxonomy of cognitive domains will be briefly explained as well.

**Piaget.** Swiss born biologist and psychologist Jean Piaget was one of the most influential researchers in the area of developmental psychology during the 20th century. Along with the writings by Lev Vygotsky, John Dewey, and Jerome Bruner, Piaget’s



theory of cognitive development forms the basis of the constructivists' theory of learning and teaching.

According to Piaget (1970b), there are four sequential and universal stages in the cognitive development of children: the *sensori-motor stage* (birth to age 2), the *pre-operational stage* (ages 2-7), the *concrete-operational stage* (ages 7-11), and the *formal operational stage* (age 11 to adulthood). He believed that all humans pass through these stages in a proposed order, and that each stage is characterized by the emergence of new abilities and ways of processing information. Since the present study involves middle and high school age subjects, only the *formal operational stage* of cognitive development will be detailed.

The hallmark of the *formal operational stage* is hypothetical-deductive reasoning, a problem-solving strategy in which an individual “begins to identify all the factors that might affect a problem and then deduces and systematically evaluates specific solutions” (Woolfolk, 2006, p. 35). In this stage, a child begins to reason logically and systematically, and intelligence is demonstrated through the logical use of symbols related to abstract concepts.

Piaget's research methods were based primarily on case studies, and while his assertion that biological development drives the movement from one cognitive stage to the next seems to be supported for the *sensori-motor*, *pre-operational*, and *concrete-operational* stages (Renner et al., 1976), data from studies on adolescents do not support the assertion that all individuals automatically move to the *formal operational stage* (Kuhn, Langer, Kohlberg, & Haan, 1977). Studies suggest that while maturation

establishes a base for this stage of cognitive development, a conducive learning environment (one that supports logical and systematic thinking) is required for most adolescents and adults to attain the *formal operational stage* (Huitt & Hummel, 2003).

**Bruner.** Influenced by the translation of Piaget's work into English, as well as his own early research on thinking, American psychologist Jerome Bruner proposed his own learning developmental stages (Bruner, Goodnow, & Austin, 1956). According to Bruner (1973), there are three developmental stages of learning: *enactive* (learning through experience), *iconic* (learning through the use of visual or mental pictures), and *symbolic* (learning through symbolic systems such as language, mathematics, or musical notation).

Bruner was among the first to emphasize educational approaches that encourage conceptual learning, which, according to Woolfolk (2006), included "the understanding of the structure of a subject being studied, the need for active learning as the basis for true understanding, and the value of inductive reasoning in learning" (p. 290). Bruner (1960) believed that students ought to participate actively in the process of acquiring knowledge through *discovery learning* (where students identify key principles of instructional materials and formulate them into concepts for themselves rather than simply accepting a teacher's explanations) and *inductive reasoning* (where students use specific examples to formulate a general principle).

Yet another influential concept that Bruner (1986) proposed is the concept of *spiral curriculum*. This theory suggests that any learning objective, no matter how complex, can be introduced at any age through developmentally appropriate teaching methods and strategies, and may be periodically expanded with greater levels of

complexity (Bruner, 1966). Bruner's idea led to a call for developmentally sequenced curricula that is observed in a number of current teaching practices and across curricula.

**Bloom.** Sixty years ago, American educational psychologist Benjamin Bloom and his colleagues developed a taxonomy, or classification system, of educational objectives with the intent to improve college and university examinations. These objectives were divided into three domains: cognitive (Bloom's Taxonomy), affective (Krathwohl's Taxonomy), and psycho-motor (Simpson's Taxonomy).

“Bloom's Taxonomy” (Bloom et al., 1956), also known as a “Taxonomy of Thinking” or “Taxonomy of Cognitive Domain,” organized educational objectives into six ordered stages: *knowledge, comprehension, application, analysis, synthesis, and evaluation*. The first three stages (knowledge, comprehension, and application) are usually referred to as the “lower levels of thinking,” while the next three stages (analysis, synthesis, and evaluation) are known as the “higher levels of thinking.” This dimension of the taxonomy is known as the “ways of knowing” and reflects the cognitive processes of gaining knowledge.

Bloom's original work has been considered one of the most significant educational writings of the twentieth century. Recently, Anderson and Krathwohl (2001) reorganized the original six processes to correlate better with current thoughts on teaching, learning, and assessment. These changes included a different form of the knowing processes--*remember, understand, apply, analyze, evaluate, and create*-- and they added to the taxonomy a second dimension known as the “kinds of knowing,” reflecting different types of knowledge. The four kinds of knowing, according to this

updated taxonomy of cognitive domains are *factual* (knowledge of terminology and specific details), *conceptual* (knowledge of classifications, principles, generalizations, theories, models, and structures), *procedural* (knowledge of subject-specific skills, techniques, and methods) and *meta-cognitive* (self-knowledge, strategic knowledge).

### **Studies on conceptual teaching in and through music.**

According to Froehlich (1992), conceptual teaching in and through music engages students in “creativity and aesthetic sensitivity, critical decision making about music, and skills of musical transfer” (Froehlich, 1992; p. 563). Even though the research on conceptual teaching in and through music has not been extensive, it is possible to establish groups of studies that focused on one or more aspects of it.

### **Studies concerned with application of Piaget's principles of cognitive development to music education.**

According to Piaget, the crucial step in the intellectual development of children occurs when they begin to develop an ability to conserve, that is, when they can recognize that an object remains the same despite changes in appearance. This thinking ability usually emerges toward the end of the *pre-operational* stage of cognitive development (2-7 years old) and is achieved completely during the concrete-operational stage of cognitive development (7-11 years old).

Several studies in music sought to relate Piaget's theories of conservation to the development of musical thought and cognition (Serafine, 1988; Swanwick & Tillman, 1986; Zimmerman, 1986). For example, Pfloderer (1964) and Zimmerman and Sechret (1970) attempted to translate Piaget's experiments on *conservation principles* with

volume and weight into a set of auditory tasks, in order to test the applicability of Piaget's developmental principles to music learning. Both studies found that Piaget's *conservation principles* are applicable in music education settings, and that children's musical growth happens through a predictable sequence.

Similarly, Swanvick and Tillman's (1986) *spiral theory* of musical development makes many assumptions based on Piaget's first three stages of cognitive development. They proposed that school age children go through four predictable stages of musical development (imitation, imaginative play, mastery, and meta-cognition) just as they go through four predictable stages of cognitive development as proposed by Piaget.

Larsen (1973) experimented with melodic permutation (inversion, retrograde, and retrograde-inversion) in order to study the transition from the *concrete operational* stage of cognitive development to the *formal operational* stage. The participants in this study were children at three grade levels (grades 3, 5, and 7). Students were presented with a set of five resonator bells and were asked to manipulate the order of the bells in one of the three ways: inversion, retrograde, and retrograde-inversion. Each pitch had a corresponding visual representation in the form of a geometric shape. Larsen concluded that there were differences in the way subjects at different ages solved the given problem. Older students completed the variations by ordering steps faster and with fewer repetitions. Also, the seventh grade students had begun to develop operations through their understanding of the validity of permutation and to make decisions based on visual relationships rather than just the aural relationship. He concluded that this finding embodies Piaget's concept of reciprocity, an essential component of the *formal operational* stage.

Harding (1986) investigated the application of Piaget's fourth stage of cognitive development, the *formal operational* stage, on undergraduate music majors. He used the *Classroom Test of Formal Reasoning* (CTFR) (Lawson, 1978) to test 195 undergraduate music majors for their ability to think at the formal operational stage of cognitive development. Harding found that only 40% of the participants in his study demonstrated thinking consistent with this stage. Subjects identified as being in the *formal operational* stage had a significantly higher mean grade point average in music classes than subjects in the lower stages of cognitive development; they also achieved significantly higher grades in cognitively-oriented music classes (music theory, music history, etc.) than students in the lower stages, possibly due to the attainment of formal operations. Music specialization (piano, strings, voice, wind, or percussion) and gender may also contribute to the attainment of *formal operations*. Female pianists exhibited higher mean scores than male pianists on the test of formal reasoning, while male string exhibited higher mean scores than female string players. His recommendations for music education included the suggestion that methods should be developed to help learners progress from the lower stages of cognition to the stage of *formal operations*.

### **Studies concerned with application of Bruner's and Ausbel's principles of conceptual teaching.**

Two main proponents of conceptual teaching, Jerome Bruner and David Ausbel, advocated two different models for the attainment of conceptual knowledge (Woolfolk, 2006). While Bruner advocated a *discovery learning* model (students discover concepts for themselves) and *inductive reasoning* (from specific to general), Ausbel proposed *expository learning* model (teachers present materials in a complete, organized form) and

*deductive reasoning* (from general to specific). Several studies in music education investigated the applicability and effectiveness of each of the two proposed models of conceptual teaching.

Hewson (1966) investigated which of two instructional methods--teaching deductively (from general to specific) or teaching inductively (from specific to general)--would be more successful in teaching fifth- and sixth-grade students in a general music class to read music. In teaching inductively, the teacher drilled each step of the reading techniques separately until the steps were mastered thoroughly. Then, the techniques were combined, and the whole was achieved. On the other hand, in teaching deductively, the teacher first exposed students to experience the musical concept in a natural setting; then through creative repetition, students experienced the peak of enjoyment that a musical concept may convey, before they discovered from a felt need the verbal theory the teacher was trying to impart to them. Independent observers (a large group of teachers) rated the music reading ability of the two experimental groups at a demonstration. Tests specifically developed for this study evaluated the success of the two methods by comparing the performance of the two groups on sight-reading, functional reading, rhythm reading, and the amount of music theory assimilated by each group. The results revealed significantly higher scores in the group of students exposed to the *inductive reasoning* (from specific to general) on all measures.

The need for more knowledge about methods pertinent to the orderly development of music listening skills prompted Haack's (1969) study on the development of these skills in high school band students. The purpose of the study was to compare the effects of two contrasting experimental approaches as they were employed in teaching

students the concept of thematic development (that is, fragmentation, pitch, and rhythm alteration) and the skills necessary for aural perception of the musical relationships involved in thematic development of a musical piece. One instructional method involved students in active analytical *deductive* listening in which the teacher directed the location and repeating instances of the specific thematic manipulations; the other method emphasized an *inductive* approach based on synthesis, in which students had an opportunity to spend some time in the manipulation of the techniques of thematic development in short class examples before the reference was made to the recorded music from which the theme was drawn. Both methods, *deductive* and *inductive*, were taught by the same teacher, and the data were collected through a designed pre-test/post-test. The results revealed that both experimental methods significantly increased students' listening skills, and that the mean of gain scores for students exposed to the *inductive method* was slightly, but consistently, higher than the scores for students exposed to the *deductive method*.

The purpose of Groeling's (1975) study was to determine if beginning instrumental students taught in a *discovery-oriented* setting differed in any way from students taught in a *skill-oriented* class. Students were matched on the basis of age and the music industry aptitude test was administered to participants prior to the study's start. The *discovery-oriented* approach, based on Bruner's theory of *discovery* learning, was one in which students had an opportunity to explore musical instruments before choosing one to specialize on, and in which students had an opportunity to engage in musical composition. In *skill-oriented* classes, students weren't given those opportunities, but were instead directed toward the development of playing skills such as proper



embouchure and breathing techniques that would enable students to perform on their instruments with an acceptable tone quality. The students were taught by the same teacher and for an equal amount of time. The findings revealed that students who had an opportunity to compose music and to explore musical instruments displayed a high level of enthusiasm through the duration of the project, but based on the results of the performance test, they did no better or no worse in terms of acquired playing skills and music comprehension.

Greer and Lundquist (1976) investigated the effect of two instructional approaches on the development of high school choir and instrumental music students' ability to discriminate the musical form of blues. The two instructional approaches were a *conceptual successive approximation* strategy and a *non-conceptual successive approximation* strategy. *Successive approximation* is the process in which the teacher demonstrates behaviors most similar to the behavior to be learned at appropriate intervals throughout the process of learning. The *conceptual successive approximation* strategy involves a systematic variation of the irrelevant properties of the concept along with the systematic presentation of relevant properties to the concept. The *non-conceptual successive approximation* strategy included no variations of the properties but repetition trials only. For instance, when teaching the musical form of blues, the irrelevant properties of blues--dynamics, instruments, duration, and melody--were varied in the *conceptual successive approximation* strategy, and the common property of the blues--chord progression--was not. In the *non-conceptual approximation* strategy, teachers utilized repetition trials only. The difference between the two groups was measured by the number of correct/incorrect trials, and the transfer of knowledge was measured by the

test of transfer. The results revealed no significant difference between the groups on the transfer post-test. It was suggested, however, that students experiencing difficulty (those who had more incorrect trials) in the aural musical discrimination of the form of blues suffered fewer incorrect trials under *conceptual successive approximation* compared to the students with many incorrect trials in the non-conceptual group.

In his well-known study on the use of *advanced organizers* in the learning and retention of meaningful verbal information, a great proponent of the expository style of conceptual teaching, David Ausbel (1960), hypothesized that the learning and retention of unfamiliar verbal materials can be facilitated by introducing the relevant concepts in advance. The experimental group of subjects in this study received a written introductory package containing extensive background information on the learning materials organized at a high level of abstraction, while the control group received a written introductory package of much lower scope and level of organization. While he found no significant difference between the gain scores of the two experimental groups, the test of retention revealed that the group that received the extensive, highly-organized verbal introduction retained the gained information for a significantly longer time. Since this study was concluded, the use of advanced organizers and the advanced presentation of materials to students before the actual learning takes place has been investigated in many subject areas (Barnes & Clawson, 1975; Langan-Fox, Waycott, & Albert, 2000; Lawton 1977), and in a modified form, found its application in music education research.

In one such study, Thorison (1997) investigated the effect of “prototype-plus” (verbal training plus a word descriptor) versus “example-only” (verbal training only) approaches to learning the typical attributes of the musical styles of two musical eras, the

Classic and Romantic eras. The subjects, general music high school students, were divided in two groups, and each group received the training on the recognition of typical Classic and Romantic style attributes (beat, phrasing, texture, chord progressions, etc.) in lecture form. Then, in addition, one group received a written description of the typical attributes of each style prior to listening to an example (“*prototype-plus*” condition). The other group's training proceeded with listening to the example only (“*example-only*” condition). The results of the test of recognition of musical styles in the listening example suggested that the “*prototype-plus*” subjects exhibited more varied evidence of the categorization of the attributes of style, even though in isolated instances, they were more confused than the “*examples-only*” subjects.

#### **Studies concerned with development of higher-level thinking skills.**

Not only did the ideas of Piaget and Bruner prompted researchers to experiment with their application in varied music education settings, but Bloom's ideas also initiated several studies that investigated the development of higher level thinking skills such as critical thinking (Pogonowski, 1985; Reahm, 1986) and transfer (Geringer & Madsen, 1987; Ling-Lu, 2002) in music education settings. Shehan (1985) tested decision-making and transferring musical skills from taught to untaught pieces of non-western music genres, and Ling-Lu (2002) investigated the effects of creative musical activities on the development of transfer learning abilities for seventh-grade music students in Taiwan. Both studies concluded that students may develop their transfer learning abilities if provided with adequate training that pertains to transfer.

Studies by Cutietta (1982,1984), deTurk (1988), Greer and Ludquist (1976), Schmidt (1985, 1989), and Serafine (1988) were all concerned with different aspects of the development of problem solving skills.

Cutietta (1984) investigated whether a hypothesis-testing technique enhanced adolescent students' understanding of chosen musical elements. The study was modeled after Bruner, Goodnow, and Austin's study (1956), which proposed that decision-making strategies are the basis for concept formation. The findings of Cutietta's study revealed that the percentage of students who were able to utilize the hypothesis-testing technique increased with age.

The purpose of the Geringer and Madsen (1987) study on transfer was to investigate the ability of undergraduate and graduate music students to create research proposals that would be relevant to applied music instruction. Half of the students who participated in this study completed a research course in music education, and the other half of the group did not. Other than that, the students were comparable in regard to the content of the courses they took at their respective universities, as well as the assignments they completed and the text books they used. The results revealed that students who completed the music education research course proposed significantly more relevant investigations, they used many more research terms, and they proposed more independent and dependent variables. The clarity of the procedures and the degree of specificity exhibited by students who completed the research course was at a much more sophisticated level. Researchers concluded that students who completed a music education research course were able to transfer what they learned in this course to an applied music setting.

Reimer (1990) and Webster (1979, 1990) explored the effect of conceptual learning through music on the development of creativity and aesthetic sensitivity. The authors suggested that conceptual learning, as proposed by Bruner, might be an important contributing factor to the development of these traits.

Palmer and Mayer (2000) examined the degree to which experienced and novice pianists transfer motor requirements (hand and fingers skills) and conceptual (melodic) relationships from one piece of music to another. They found that advanced players are capable of transferring both motor and conceptual dimensions of the known piece to the new piece, while novice pianists didn't exhibit this capability. Their findings also suggested that mental plans for action became independent only at the advanced level.

#### **Studies on conceptual teaching in performance classes.**

The purpose of the Misenhelter (2000) studies was to demonstrate contrasting strategies that focused upon either specific conceptual teaching behaviors (*process-oriented* strategies) or performance-oriented strategies (*product-oriented* strategies) to music teachers in training and to determine whether the pre-professional teachers could discriminate conceptual from non-conceptual teaching behaviors when viewed on videotape. The researcher first proposed conceptual teaching to be an essential way of teaching music in the light of the National Standards for Music Education. He pointed out that Standard 8 of the nine standards asks for students' understanding of the relationships between music and other arts, and Standard 9 asks for students' understanding of music within the context of the historical period and style. Both standards, therefore, imply that teaching "beyond" the performance of the piece of music is necessary and appropriate.

The subjects-observers ( $N = 108$ ) in the Misenhelter (2000) study were instrumental music education majors ( $n = 36$ ), vocal music education majors ( $n = 36$ ), and elementary education majors ( $n = 36$ ) from two universities. Six musical selections were chosen as “core repertoire” pieces for the secondary level. After the author determined which element of music (e.g., form/style, texture, dynamics, etc.) or which aspect of performance (e.g., intonation) could be the best taught through each piece, the investigator created twelve teaching scripts, six for conceptual and six for non-conceptual teaching strategies. The concepts were identified and selected from widely used music education method books. The subjects watched the twelve scripted video recorded rehearsals ( $N = 12$ ) and identified them as “*conceptual*” or “*non-conceptual*” teaching.

The total correct recognition and identification of the conceptual examples was 66%, and recognition and identification of the non-conceptual examples was 57%. The scripted examples that focused on texture and intonation proved to be the most difficult for music majors to identify correctly. The comparison of scores revealed that instrumental majors consistently scored higher on recognition of the conceptual examples than on recognition of the non-conceptual examples. The most interesting finding of the study was that non-music majors (elementary education majors) scored slightly higher (59%) on recognition of these strategies and achieved a higher correct response rate than vocal or instrumental majors.

The elementary education majors who participated in this study had no formal musical background, and the only musical experience most of them had was the music methods course in which they were concurrently enrolled. This course included a broad instruction on musical concepts. The higher score of the elementary education students

suggests that musical concepts could be taught, at least to a level of discrimination and in a comparatively short period of time.

The study that was even more directly concerned with conceptual teaching was the study by Blocher et al. (1997) on seven teaching behaviors of band directors with a particular interest being placed on the use of time on conceptual teaching in regular rehearsal settings. For the purpose of that study, conceptual teaching was operationally defined as “the verbal behaviors of band directors in a rehearsal setting in which the band director attempts to make students aware of, have an understanding of, and/or be able to transfer any musical concept” (Blocher et al., p. 459). The subjects in this descriptive study were 18 ( $N = 18$ ) full-time middle and high school band directors. The participants were instructed to videotape (with a camera focused on the director) one to two of their regular rehearsals during a one-week period and to send it to the researchers.

The researchers viewed each recorded sample to verify the number and length of included rehearsals as well as compliance with the taping specifications. Each acceptable videotape was divided into 20-minute segments. Randomly extracted segments were transferred to one videocassette, and two trained observers viewed the segments. For the purpose of that study, seven behaviors were observed, recorded, and analyzed: (a) nonmusical behaviors, (b) nonverbal instruction (direction), (c) verbal instruction (direction), (d) non-interactive listening, (d) nonverbal feedback, (e) verbal feedback and (f) conceptual teaching. Three aspects of conceptual teaching were recorded: the teacher verbalizing a concept in such way that the students were given an opportunity for awareness and understanding of the concept with a potential for transfer, the teacher asking questions in a way that the students' answers potentially aid to the establishment

of relationships, new ideas, or categories, and the teacher answering questions in a way that the answer expanded the instance at hand.

The two trained observers viewed the video samples and simultaneously manipulated a *Continuous Response Digital Interface* (CRDI) device to indicate the specific teacher behaviors. The dial was partitioned into seven zones corresponding to the seven behaviors with “Nonmusical” at the far left end and “Conceptual Teaching” at the far right end of the device. Observers recorded and calculated the frequency, the length of time, and the percentage of time for each of the seven behavioral categories. The data were reported in three tables (middle school directors, high school directors, combined middle and high school directors) indicating the raw count for each behavior, the percentage of time used for each behavior, and the mean time used for each behavior expressed in minutes and seconds. All behaviors, excluding conceptual teaching, were analyzed in two categories, non-verbal and verbal. Conceptual teaching was analyzed only as “verbal behavior.”

The summary of findings in this study revealed that middle and high school band directors tended to spend less than 3% of rehearsal time engaged in conceptual teaching behaviors. Expressed in terms of mean time, middle and high school band directors engaged in conceptual teaching on an average of only 32 seconds from an average 19-minute, 20-second teaching segment. Middle school band teachers averaged 13 seconds less than high school band directors, and five band directors (four middle school and one high school) didn’t use conceptual teaching at all, as defined in this study. The researchers suggested that the reason for the seemingly low frequency of conceptual teaching may be due to the inclination to teach in the way one was taught, the lack of



appropriate role models, and the absence of conceptual teaching methodology in music teaching training programs. The authors indicated the need for further study with a similar or modified purpose.

## **Summary**

A thoughtful and stimulating quote by Socrates, “The unexamined life is not worth living” (Socrates, Plato’s Dialogues, Apology, trans. 1956), is relevant to all aspects of this inquiry. Before any suggestions for the improvement of effectiveness of string teachers in rehearsal settings can be made, a study that observes teaching behaviors in string education settings and examines the use of time on them is necessary. In addition, secondary music teachers work with students whose mental system for controlling sets of variables goes from the *concrete operational stage* to the *formal operational stage* of cognitive development (Piaget, 1969). At this stage, the focus of thinking can shift from “what is” to “what might be,” and the development of the ability to think abstractly is a critical skill not only for solving mathematical and science problems, but also for completing assignments successfully in social studies and language arts classes as well.

Many students, however, remain at the *concrete operational stage* throughout their school years, even throughout life. Presenting students with learning experiences that stimulate the development of higher-level thinking skills may help them to progress from the *concrete operational stage* to *formal operational stage* of cognitive development. Conceptual teaching is a teaching strategy proposed by cognitive theorists as one that can bring students’ thinking from lower levels of cognition (remembering,

understanding, and applying) to higher-levels of thinking (analyzing, evaluating, and creating). Only one study, thus far, has focused its attention on an examination of the time used on conceptual teaching in performing classes (Blocher et al., 1997). The present study is a replication of the Blocher et al. study, and while its purpose is to measure the frequency and the time orchestra directors use on the seven specific teaching behaviors, of particular interest is the frequency and the use of time orchestra directors engage in conceptual teaching during rehearsals.

Table 3 lists the most relevant studies to this investigation.

Table 3.

*Summary of Studies Most Directly Related to Present Investigation.*

Study Type	Study
Conceptual teaching in secondary music classes	<ul style="list-style-type: none"> <li>• Blocher, Greenwood, &amp; Shellahamer (1997)</li> <li>• Misenhelter (2000)</li> </ul>
Teaching musical concepts in strings	<ul style="list-style-type: none"> <li>• Hendricks (2010)</li> <li>• Nelson (1983, 1984)</li> <li>• Wentworth (1977)</li> </ul>
Higher-level thinking skills in music	<ul style="list-style-type: none"> <li>• Hanna (2007)</li> <li>• Harding (1986)</li> <li>• Strauser (2008)</li> <li>• Watkins (1993, 1996)</li> </ul>
Use of time and teaching behaviors in strings	<ul style="list-style-type: none"> <li>• Allard (1992)</li> <li>• Colprit (2000)</li> <li>• Duke (1999)</li> <li>• MacLeod (2010)</li> <li>• Witt (1986)</li> </ul>

## CHAPTER III

### METHODOLOGY

The first two chapters of this document provided an overview of relevant literature on the use of time and various teaching behaviors in music education settings along with information on the theoretical foundations of conceptual teaching. The present study examined the utilization of the time that middle and high school orchestra teachers spent on seven specific teaching behaviors during the typical rehearsal. Of particular interest was the amount of time that orchestra teachers engaged in conceptual teaching behaviors.

#### **Pilot Study**

In order to examine the efficacy of all procedures proposed for the main study, the researcher conducted a pilot study in the fall of 2010. There were six goals for conducting the pilot study: 1) to recruit a pilot study participant; 2) to investigate the effectiveness of recruitment procedures and clarity of the study's forms and procedural instructions; 3) to provide an opportunity for the researcher to test procedures with collected video recordings (segmenting, randomizing, and randomly selecting video clips) and to configure *SCRIBE* (*Simple Computer Recording Interface for Behavioral Evaluation*, Duke & Stammen, 2007) for the needs of the study; 4) to create training materials for independent observers; 5) to recruit independent observers and train them to recognize the seven proposed teaching behaviors, and to train them to use *SCRIBE*; and 6) to establish a desired inter-observer reliability level.

### **Recruitment and teaching video recording procedures.**

One high school orchestra director from a large school district in the Pacific Northwest was identified as a possible pilot study participant through a professional connection (convenience sample). The participant was selected based on the following criteria: a) he/she had to be a full-time middle/high school orchestra teacher, and b) he/she had to be orchestra teacher in one of the three states: Washington, Oregon, or California. Both selection criteria were based on the Blocher et al. (1997) study in which they used full-time middle and high school band directors from Florida, where the study took the place. Because of a relatively smaller population in Oregon, where this study took place, the investigator in the present study elected to recruit participants from three states: Washington, Oregon, and California. The pilot study participant was contacted via phone and initial interest in participation in the pilot study was established.

The researcher then mailed a recruitment letter (see Appendix A) to the pilot study participant. The purpose of the recruitment letter was to officially invite the subject to participate in the pilot study and to pre-screen his/her eligibility and willingness to participate in the study. The participant confirmed his /her willingness and eligibility to participate in the pilot study by contacting the researcher via e-mail as indicated in the recruitment letter. After receiving a confirmation message, the researcher mailed the consent form (see Appendix A) to the participant, a cover letter for the questionnaire, and a short questionnaire (see Appendix A). All three forms were developed by the researcher in accordance with the regulations stated by the university's Office for the Protection of Human Subjects.

The purpose of the consent form was to obtain the participant's written consent to participate in the pilot study. The consent form explained that participation in the study was completely voluntary and that the participant's confidentiality was fully protected. The cover letter for the questionnaire was the form suggested by the university's Office for Protection of Human Subjects and its purpose was to explain the need for the questionnaire. The questionnaire had only two questions: 1) At what grade level are you teaching full time orchestra?, and 2) In what state do you teach orchestra?

Shortly after the investigator received the signed consent form and completed questionnaire, a video release form, the recording directions (see Appendix A), two pre-labeled blank recording media of the type preferred by the participant (mini-DVs) as indicated by the participant, and a stamped, pre-addressed, padded envelope were mailed to the pilot study participant. The labels were created by the researcher, and the codes on the computer-generated adhesive labels indicated the type of school (e.g., HS for high school and MS for middle school) and the number of the recorded session (e.g., number 01 for the first recording session, number 02 for the second, etc.). The video release form was developed by the researcher and based on the form that the university's Office for Protection of Human Subjects provided as a model to be used in studies that require videotaping. The recording directions form was also researcher-developed and based on recording directions as stated in the Blocher et al. (1997) study (see Appendix A).

The nine-step directions specified every step the participant needed to perform in order to complete the video recording task successfully (see Appendix A). The participant was asked to position the camera in the back of the room and to videotape him/herself only (not the students) conducting two orchestra rehearsals in their entirety

(from the very beginning to the very end of class) within one week. The participant completed the recording task within the given time frame and mailed back to the researcher two mini-DVs with approximately 140 minutes (140') of recorded materials in the provided pre-addressed, stamped, and padded envelope by the indicated date. Along with the video recordings, the participant returned a signed video release form. Immediately upon opening it, the researcher destroyed the envelope with the participant's mailing address and deposited the video release form in a private file.

Next, the researcher conducted a formal follow-up interview with the pilot study participant over the phone. The purpose of this interview was to obtain the participant's feedback on the recruitment procedures, the clarity of the forms, and the clarity of the recording directions. The participant's feedback revealed the need to make two changes: (a) to shorten the consent form, and (b) to mail forms in different order. Suggested changes were incorporated into the procedures for the main study. This step completed the first two goals of the pilot study: 1) to recruit a pilot study participant and 2) to investigate the effectiveness of the recruitment procedures and the clarity of study's forms and instructions.

### **Pilot study videos and configuring *SCRIBE*.**

The researcher watched the video recordings to verify both the number and length of rehearsals. The video recordings captured two rehearsals of two different high school orchestras taught by the same teacher. The recordings were made within one week, and they were of different duration: one recording was 60 minutes long, and the other recording was 80 minutes long. After viewing the recordings, the researcher determined

that both recordings were made in compliance with the specifications stated in the recording directions. Therefore, the researcher was able to use both recordings in their entirety (a total of 140 minutes of video recordings) in the follow-up procedures.

The first step in processing the video recordings was to normalize the received recordings to a computer-based file format by using a program called *HandBrake* (Open Source Community, 2011). This program converted the recordings from the mini-DVs to an MP4 file format. All rehearsals were then divided into 20-minute segments starting at the very beginning and concluding at the very end of each recording by using a video-editing program called *MPEG Streamclip* (Video Conversion Software, 2008). Each segment was then trans-coded into *QuickTime* (Hayes, Tesar & Zuraw, 2003) format and saved to a file. This resulted in seven 20-minute video segments.

The next step was to assign consecutive numbers to each segment using the source file name and sequence number (e.g., R1S1 where R stands for rehearsal, S for segment, and 1 for segment number one, R1S2 (same as before), etc.). A table of random numbers in *Microsoft Excel* was used to order the segments randomly. Seven randomly ordered 20-minute *Quicktime* video files were stored on a 4GB flash drive for use in the *SCRIBE* programming preparation. The researcher loaded the video clips and used *SCRIBE* software (*Simple Computer Recording Interface for Behavioral Evaluation*, Duke & Stammen, 2007) to configure seven color-coded and word-coded tabs corresponding to the seven behaviors to be observed. The newly created *SCRIBE* file was saved for use in future data collection training procedures. This step concluded the third goal of the pilot study: to provide an opportunity for the researcher to test procedures with collected video

recordings (segmenting, randomizing, and randomly selecting video clips) and to configure *SCRIBE* for the needs of the study.

In the meantime, the researcher created a 25-minute training video demonstrating the seven teaching behaviors to be investigated in the study. The researcher also created a written script explaining each of the seven behaviors with several examples given for each behavior. The simulated teaching behaviors and the script were modeled after examples given in the Blocher et al. (1997). The researcher created this training video in her own high school orchestra class. During the recording session, the camera was positioned in the back of the classroom, and only the teacher's/researcher's face and body were visible in the recording. The teacher/researcher demonstrated each of the seven behaviors through several visual examples modeled after the description of the behaviors in Blocher et al. (1997). The training video recording session took place after regular school hours so that no class time was used for the purpose of the study. Students were awarded extra points for this activity, and the session took 45 minutes of the students' time.

The researcher then used the program called *Adobe Premier Pro* (Adobe Systems, Inc. 2010) to incorporate the recorded materials into a training video. On the training video, each teaching behavior was presented by several examples. The seven teaching behaviors were separated from each other with color- and text-coded slides so that observers could clearly distinguish one behavior from another. Along with the researcher's visual modeling, a narrator's voice explained the seven behaviors by reading a written script. This step concluded the fourth goal of the pilot study: to create training materials for independent observers.



## **Recruitment and Training of Independent Observers**

Potential independent observers were identified through email correspondence soliciting information from members of the university's string faculty. The university string faculty suggested that independent observers be recruited from the pool of the senior Suzuki teachers teaching applied and group lessons in the university's Suzuki program because of their seniority in teaching strings and their experience in teaching strings in music education settings. Five criteria were used in selecting the observers: (a) Observers had to have at least a bachelor's degree in music performance and/or string pedagogy on one of the four string instruments; (b) Observers had to be string instrument teachers with evidence of at least three years of successful teaching in applied and group string teaching settings and some experience in teaching strings in music education settings; (c) Observers' educational and teaching experience background had to be as similar as possible in duration and quality; (d) Observers had to be willing to take an on-line training course on the protection of human subjects, and (e) Observers had to be able and willing to dedicate 16 hours to the project at hand within the period of two months.

Once identified, two potential independent observers were first contacted via email, followed by mail with the researcher-developed recruitment letter for the independent observers (see Appendix C). The letter invited the observers to participate in the study, and it stated the expectations and requirements for participation in the study. The independent observers confirmed their willingness to participate in the study via email. The researcher then mailed to the observers the researcher-developed consent form which the observers signed and mailed back to the researcher (see Appendix C).

The two independent observers selected for this study both had a master's degree in music performance in violin and were registered Suzuki teachers. Each observer's teaching experience included four years of teaching applied as well as group lessons to students aged three to eighteen. Both observers served as master teachers in the Suzuki program at an accredited university in the Pacific Northwest and were active performers of local orchestras. The teaching experience of the observers in music education settings was limited to occasional classroom experience and observations of orchestra teachers. Both observers were females.

The next steps were to train the observers to recognize the proposed teaching behaviors and to train the observers how to use the *SCRIBE* program. The training of the two independent observers was conducted by the study's investigator and took place in two separate two-hour training sessions. The main purpose of the first training session, which took place in mid-December, 2010, was to train observers to recognize the seven teaching behaviors. During this session the investigator and observers read the written script and watched the training video. Then they discussed and clarified each of the seven teaching behaviors presented in the training materials.

During this first session, the researcher and observers recognized the need to discuss the difference between behaviors marked as "verbal instruction" and "verbal feedback," between "nonverbal instruction" and "nonverbal feedback," and between "verbal instruction" and "conceptual teaching" in more detail because those behaviors initially appeared to be interchangeable. The clarification was accomplished through additional reading of the written script and pointing out the key words in the Blocher et al. (1997) definitions of the teaching behaviors (e.g., "*instruction - direction*" for

nonverbal instruction and “*reaction*” for verbal and nonverbal feedback, and “*instruction - direction*” for verbal instruction and “*awareness and understanding*” for conceptual teaching) which marked the difference between those seemingly interchangeable behaviors. Additional viewing of the training video and observing the behaviors as isolated entities also reinforced the understanding of the behaviors in question. It was concluded that reading the script before each observation session would be required to help observers to perceive the seven teaching behaviors with more clarity. At the end of the first training session, the researcher provided the observers with folders containing training materials (the training video and training script), and the independent observers agreed to reinforce training by watching and reading the materials on their own time.

The second two-hour training session took place three weeks after the first one (early January, 2011). The main purpose of this session was to train observers how to use *SCRIBE* (*Simple Computer Recording Interface for Behavioral Evaluation*, Duke & Stammen, 2007). This second training session took place in the university’s computer laboratory, which enabled each observer to work simultaneously on two computers. The researcher introduced *SCRIBE* by explaining its history and features and also pointed out several studies that used *SCRIBE* as a data collection tool. *SCRIBE* is a computerized observation program designed for recording and summarizing observational data. A number of studies have used this program as a convenient tool to collect and summarize data (Hancock, 2003; Henninger, Flowers, & Council, 2006). The researcher provided step-by-step written instructions on all the necessary procedures for using *SCRIBE* for the purpose of the present study (see Appendix C).

This brief introduction was followed by a hands-on exploration of the options that *SCRIBE* provides (e.g., collecting data by clicking on coded tabs, using the “review” and “pause” options, viewing data displays in different formats, saving and printing data, etc.) while watching the first of the seven 20-minute movie files prepared earlier for them from the pilot study participant’s video recordings. Both observers simultaneously watched the same video clip. All options that *SCRIBE* software offers were explored, and all questions were answered before the observers engaged in the real observation situation. This step concluded the fifth goal of the pilot study: to recruit independent observers, to train them to recognize the seven proposed teaching behaviors, and to train the observers to use *SCRIBE*.

## **Data Collection**

After a short break to refresh the observers’ attention (which may have been tired from watching videos for a long time), the observers made their first formal observation for the purpose of calculating inter-observer reliability. Observers watched a second 20-minute pilot study video clip while collecting data by clicking on one of the seven color- and word-coded tabs. The data summary provided information on the frequency, duration, percentage of time, mean, and standard deviation of each of the seven teaching behaviors. The inter-observer reliability level ( $R$ ) for the frequency and duration of each behavior was calculated by dividing the smaller number from one observer by the larger number from the other observer for each of the seven behaviors. This inter-observer reliability procedure has been used in a number of published studies in music education research (Duke & Madsen, 1991; Henninger, Flowers, & Council, 2006; Salzberg &

Salzberg, 1981). The overall agreement of 0.60 ( $R = 0.60$ ) revealed a low reliability level, showing the need for more training on recognition of the seven teaching behaviors.

Two additional 90-minute training sessions were conducted. These sessions included further reading of the script, in-depth discussions between the observers and the researcher about the seven teaching behaviors, and watching two not previously viewed 20-minute video clips with frequent pauses to discuss behaviors. Three weeks after the initial reliability session (late January, 2011), another reliability session took place. The reliability level was calculated for frequency and duration for each of the seven behaviors. In this instance, reliability was calculated at 0.86 ( $R = 0.86$ ), indicating an acceptable level of agreement. This step concluded the sixth goal of the pilot study: to establish the desired inter-observer reliability level.

The actual study took the place soon after the pilot study's conclusion, during January, February, and March of 2011.

## **Participants**

The participants were recruited through professional recommendations and contacts (convenience sample) while the pilot study was still underway (fall/winter of 2010). In replication of the Blocher et al. (1997) study's procedures, two selection criteria were used to select the participants for this study. Participants needed to be a full-time middle or high school orchestra teachers, and participants had to teach in one of the three states: Washington, Oregon, or California.

The participants in this study ( $N = 12$ ) were six ( $n = 6$ ) full-time middle school and six ( $n = 6$ ) full-time high school orchestra teachers teaching in states of Washington ( $n = 1$ , middle school orchestra teacher), Oregon ( $n = 10$ , five middle school and five high school orchestra teachers), and California ( $n = 1$ , high school orchestra teacher). All six middle school teachers taught only at the middle school level while four out of the six high school participants taught at both middle and high school levels. The educational background of nine participants included master's degrees in either music education or music performance, and three participants had bachelor degrees in music performance on a string instrument. All twelve participants possessed valid teaching licenses in their respective states at the time of the study. The teaching experiences of participants ranged from three to twelve years of teaching strings and orchestra in public school settings. Seven out of the twelve participants taught in the school districts where performing ensembles were required to participate in districts or state festivals. One of the four string instruments was the primary instrument of all participants. Nine participants were males and three were females.

## **Materials**

Materials used in this study were categorized as follow: (a) recruiting/correspondence materials, (b) mailing materials, (c) materials/equipment used by the researcher, (d) equipment used by the participants, (e) equipment used by the observers, and (f) materials for training the independent observers. A detailed list of items in each category is provided in the Appendix B

## **Recruiting Procedures**

Recruiting activities for the main study took place during the fall and winter of 2010. The researcher compiled a list of potential participants and their phone numbers through professional recommendations and contacts. Potential participants had to be full-time middle or high school orchestra teachers in the states of Washington, Oregon, or California. Twenty ( $N = 20$ ) middle and high school orchestra teachers in states of Washington, Oregon, and California were identified as potential participants. The researcher made an initial contact with the 20 potential participants by phone. Sixteen ( $N = 16$ ) teachers expressed an interest in participation in the study.

In early December 2010, the researcher mailed a recruitment letters inviting the 16 potential participants to consider participating in the study. Twelve participants confirmed their eligibility and willingness to participate in the study via e-mail or phone message as instructed in the recruitment letter. In this initial correspondence, the participants also indicated the preferred recording media for the researcher to mail. In late December 2010, the investigator mailed a consent form, a cover letter for the questionnaire and a questionnaire, the video release form, the recording directions, along with the indicated preferred recording media with coded adhesive labels, and a stamped, pre-addressed, padded envelope to all participants eligible and willing to participate in the study. Participants were asked to complete and sign the forms and to video-record two of their regular rehearsals according to the recording directions within a specified time frame.

## **Participants' Procedures**

Participants were given three weeks to record two of their regular orchestra rehearsals in their entirety. The instructions asked that the recording device be positioned in the back of the room so that it captured only the teacher's body and face. The participants were instructed to strictly follow the specified recording directions and were asked to record both rehearsals within the same week.

After each recording session, the participants placed the prepared coded adhesive labels on each recording (e.g., HS1R1 or HS1R2, etc.). All twelve participants completed the task within the indicated time frame. Recorded materials were mailed to the researcher in the provided pre-addressed, stamped and padded envelopes. This step concluded the participants' procedures.

## **Data Collection Procedures**

The researcher opened and immediately destroyed all envelopes with the participants' mailing information in order to protect participants' confidentiality. The researcher sent a Thank You Letter to all participants (see Appendix A) informing the participants that their recorded materials were received and that as a courtesy, once the study was concluded, the participants would receive its results.

## **Verification of Received Recordings**

In several separate sessions, the researcher viewed all recordings to verify both the number and length of rehearsals. It was concluded that each of the twelve participants



videotaped two rehearsals in accordance with recording directions (camera in the back of the classroom and rehearsal captured from its beginning to its end) resulting in twenty-four (24) full-length recordings. The recordings ranged in length from 36 minutes to 82 minutes for a total of 20 hours, 30 minutes, and 40 seconds of recorded materials. Middle school video recordings were shorter in length (38 to 54 minutes) resulting in 7 hours, 53 minutes and 2 seconds of recorded materials. High school video recordings were longer in length (62 to 82 minutes) resulting in 12 hours, 37 minutes, and 2 seconds of recorded materials. This initial viewing revealed that the video recordings recorded by four of the middle school teachers contained a lengthy opening part of the rehearsals in which nothing but tuning took place. The durations of those tuning portions were between five to twelve minutes per video tape.

### **Segmenting and Randomization of Received Recordings**

In order to control for variations in rehearsal lengths and to obtain equal representation of each participant, three steps took place:

1. Each recording was divided into 20-minute segments.
2. Segments were then randomly ordered.
3. Lastly, twelve 20-minute segments from the middle school recorded samples and twelve 20-minute segments from the high school recorded samples were randomly selected for observers to view, for a total of twenty-four 20-minute video segments (or four hours of middle school video segments and four hours of high school video segments).

Recordings were received in two media types: DVD videos (eleven participants) and a flash drive (one participant). The DVD recordings came in two media formats: DVD (digital video disk) movie and DVD-R (digital video disk read-only) format. The flash drive recording was submitted in Macintosh HFS+ format.

In order to divide the DVD videos into video segments, the DVD videos first needed to be converted into a MPEG-4 format. The researcher used *HandBrake* (an open source DVD video trans-coder) to convert DVD videos into MPEG-4 format suitable for splitting software. There was no need for this step with the DVD-R videos or the flash drive recording, and those two media formats were simply copied into MPEG-4 format.

Using MPEG *Streamclip* (freeware program for splitting and transcoding video clips), the researcher segmented each source file into the maximum number of consecutive 20-minute segments, ranging from two to eight segments per rehearsal depending of the length of the rehearsal. Any remaining content shorter than 20 minutes was discarded. This resulted in 17 segments derived from the middle school samples and 34 segments derived from the high school samples, for a total of 51 segments suitable for study's needs.

Each segment was then transcoded into *QuickTime* format and saved to a file. Next, the segments were numbered sequentially using the source file name and segment number (e.g., HSR1S2, HSR2S2, etc. where HS stood for “high school,” R for “rehearsal,” S for “segment,” and 2 for “segment number 2”).

In order to provide depth to the findings of this study given the limited number of participants ( $N = 12$ ), each participant was represented with two 20-minute video-

recorded segments (one from each rehearsal) for a total of twenty-four video segments (twelve for middle school and twelve for high school groups participants). This was a convenient way to enlarge the sample. In an attempt to present all rehearsal segments in a non-biased way, the twenty-four video segments needed to be randomly ordered.

Depending on the length of the recorded rehearsal, the range of the number of segments was between two and eight per recorded rehearsal. If two video recordings of any given participant resulted in only two 20-minute segments, two segments were selected by simulated coin flip technique, resulting in the selection of one segment from each recording. If more than two segments were available for any given participant, the researcher used the following random selection technique:

1. The random number generator in *Microsoft Excel* generated a value of zero (0) and one (1) simulating a coin flip technique, where 0 equals “heads” and 1 equals “tails.”
2. The researcher took the multiple segments per rehearsal (more than two segments) and divided them into binary groups, with multiple branches based on total number of segments.
3. For a flip of “heads,” researcher selected the top branch, and if branch led to single segment, that segment was chosen. If the branch led to another branch, then a subsequent flip was required. For “tails,” the bottom branch was selected. (The researcher continued branching until reaching a single segment from each video recording.)

4. This resulted in 12 segments for middle school and 12 segments for high school participants, for total of 24 segments or 8 hours of video materials (four hours for middle and four hours for high school) to observe.

To establish a random play order of the segments, the researcher used 12 computer-generated, random numbers and sorted them along with numbers 1-12 which resulted in a random sequence. This procedure was applied to middle school segments and to high school segments.

The combination of the random selection technique and the random ordering procedure resulted in two playlists (one for middle school and one for high school segments) for the teacher behavior analysis. Video segments were labeled in order MSR1, MSR2, etc., or HSR1, HSR2, etc. where MS stood for “middle school,” HS stood for “high school,” R stood for “rehearsal,” and 1 stood for “rehearsal number one”. Segments ordered in this fashion were transferred to 8GB flash drive for the *SCRIBE* preparation.

The twenty-four 20-minute video segments were loaded on a new *SCRIBE* file. The seven color-coded and word-labeled tabs prepared during the pilot study to correspond to the seven teaching behaviors to be observed were transposed into a new *SCRIBE* file for the independent observers to start their observations.

## **Data Collection**

The same two independent observers trained in the pilot study observed video segments while recording the data in *SCRIBE*. Observers were given fourteen days (two-

weeks) to observe and collect data on the twenty-four 20-minute video segments (twelve middle and twelve high school video segments, or four hours of each level). Observers were instructed not to watch more than two video segments per day in order to prevent exhaustion and to provide the breadth of focus. Observers watched the videos at their convenience and not necessary together.

As recommended during the training sessions, before each viewing session, the independent observers read the script with definitions and explanations of the seven teaching behaviors to reinforce the perception of the behaviors. They also reviewed the directions on how to use *SCRIBE* (see Appendix C) so that no technical obstacle would jeopardize observations.

The independent observers selected a specific teaching behavior every time they recognized it by clicking on an appropriate color-coded and word-labeled tab. If uncertainty about what behavior to select arose during the observation, observers paused the viewing and consulted the written script for verification. When two or more behaviors occurred simultaneously, observers agreed to select each behavior for its duration in order of occurrence. At the conclusion of each observation session, observers saved and then printed the raw scores and the summary of collected data. An electronic copy and a printed copy of all observational data were given to the researcher for further data analysis immediately after the last observation was completed. A post hoc interview in which observers expressed their opinion about the study and observation procedures was conducted with the independent observers immediately after the last observation. The post hoc interview included two steps: 1) A verbal interview with the investigator in which observers expressed their opinions and attitude towards the study and observation

procedures, and 2) A written reflection to clarify the observers' position on (a) seemingly interchangeable behaviors, and (b) simultaneous behaviors.

During this interview, the independent observers had an opportunity to express their attitudes toward the study and to provide a written feedback on insights in regard to the study. Both independent observers said that participation in this study was a positive and educational experience for them. In their written feedback, they explained that there were two prominent teaching behaviors among orchestra teachers that were not part of any of the seven proposed operational definitions: tuning instruments, and vocal and instrumental modeling. Since orchestra teachers in this study frequently used those two behaviors, the independent observers needed to mark them and place them in one of the existing behavior categories. Prior to the start of the study but after the independent observers completed their training with the pilot study video segments, they agreed to place tuning in the “nonmusical” behavior category and vocal and instrumental modeling in the “nonverbal instruction” category. This step concluded observers' participation in the study.

### **Data Analysis Preparation**

The researcher verified the submitted *SCRIBE* data for both number of observations and inclusion of all specific data analyses such as frequency, time, percentage of time, mean and standard deviation and found that the submitted data were complete for all twenty-four observations.

Then the researcher created a spreadsheet in *Excel* and transcribed the following statistical analysis from *SCRIBE* summaries: frequency, duration, percentage of time,

mean, standard deviation, and total observation time per segment. These data were entered for both observers and all twenty-four observations.

The reliability level for the independent observers while doing the study was calculated by randomly selecting six segments (25% of all twenty-four segments) and calculating the overall level of agreement for frequency and time. The reliability level from six observations during the study was 0.76 ( $R = 0.76$ ).

## CHAPTER IV

### RESULTS

The purpose of this study was to observe the frequency and duration of seven operationally defined teaching behaviors exhibited by middle and high school orchestra directors during a typical rehearsal period. The seven categories of behaviors included: (a) nonmusical behaviors, (b) nonverbal instruction (direction), (c) verbal instruction (direction), (d) non-interactive listening, (e) nonverbal feedback, (f) verbal feedback, and (g) conceptual teaching. This study was designed to examine three specific research questions: (1) How frequently do middle and high school orchestra directors engage in seven specific operationally defined behaviors throughout a typical rehearsal period?; (2) How much time (average time and percentage of time) do middle and high school orchestra directors spend on the proposed teaching behaviors?; and 3) Of particular interest was, how frequently and how much time do middle and high school orchestra directors engage in conceptual teaching behaviors throughout the observed rehearsal periods?

Two trained independent observers watched twenty-four (twelve middle school video-recorded samples and twelve high school video-recorded samples) 20-minute video segments of rehearsal periods (four hours of middle and four hours of high school teaching samples). Observers recorded the frequency and duration of the proposed behaviors using the software program *SCRIBE*.



Approximately 6,915 instances of discrete teaching behaviors (3,420 for middle school and 3,495 for high school) were recorded by the two observers. Each of these instances was created by the observer by selecting the tab for a specific teaching behavior as they occurred in time. Summaries of these instances were generated from *SCRIBE*, and were used as the basis for analysis.

### **Data Analysis**

The observed frequency and duration (minutes and seconds) of each of the seven selected teaching behaviors served as raw data for analysis. The values in Table 4 represent the mean frequency, average time, and percentage of time of two observers' data for each behavior, categorized by middle school only, high school only, and both levels combined.

Table 4.

*Frequency and Use of Time on Seven Teaching Behaviors*

Teaching Behaviors	Mean Frequency	Average Time	Percentage of Time	Total Time
MIDDLE SCHOOL				
				20:03.2
Nonmusical	7.92	02:29.0	12.38%	
Nonverbal Instruction	34.46	04:38.5	23.15%	
Verbal Instruction	46.79	06:23.4	31.87%	
Non-interactive Listening	15.92	02:08.9	10.71%	
Nonverbal Feedback	7.88	00:26.1	2.17%	
Verbal Feedback	25.88	02:20.2	11.65%	
Conceptual Teaching	3.67	01:29.0	7.40%	
Total		19:55.0	99.32%	
HIGH SCHOOL				
				20:02.3
Nonmusical	8.00	03:24.6	17.01%	
Nonverbal Instruction	36.88	06:38.7	33.16%	
Verbal Instruction	45.08	04:44.3	23.65%	
Non-interactive Listening	12.04	01:43.7	8.63%	
Nonverbal Feedback	10.25	00:32.1	2.67%	
Verbal Feedback	31.58	02:11.4	10.93%	
Conceptual Teaching	1.79	00:38.6	3.21%	
		19:53.3	99.26%	
COMBINED				
				20:02.7
Nonmusical	7.96	02:56.8	14.70%	
Nonverbal Instruction	35.67	05:38.6	28.15%	
Verbal Instruction	45.94	05:33.9	27.76%	
Non-interactive Listening	13.98	01:56.3	9.67%	
Nonverbal Feedback	9.06	00:29.1	2.42%	
Verbal Feedback	28.73	02:15.8	11.29%	
Conceptual Teaching	2.73	01:03.8	5.30%	
			99.29%	

In response to the study's questions one (1) and two (2), the results indicated that on average, nonmusical behaviors occurred 7.92 times at the middle school level, 8.00

times at the high school level, and a mean of 7.96 times for the two levels combined. Middle school orchestra directors spent 2 minutes 29 seconds (or 12.38% of observed time) on nonmusical behaviors, high school orchestra directors spent 3 minutes 24 seconds (or 17.01% of the observed time), and the two levels combined resulted in a mean of 2 minutes 56 seconds (or 14.70% of the observed time). Nonmusical behaviors included: a) getting ready activities, b) announcements of upcoming events and accompanying procedures, and c) discipline.

In the average time frame of 20 minutes 2 seconds, orchestra directors at the middle school level, on average, engaged in nonverbal instruction/direction 34.46 times, at the high school level 36.88 times, resulting in a mean of 35.67 times for the two levels combined. The report indicated that during the same time frame, on average, middle school orchestra teachers spent 4 minutes 38 seconds (or 23.15% of the observed time frame) on nonverbal instruction, while high school orchestra teachers spent 6 minutes 38 seconds (or 33.16%), resulting in a mean of 5 minutes 38 seconds (or 28.15%) for the two levels combined. Nonverbal instruction (direction) included giving instruction through proactive conducting and teacher's facial expressions, body language, and other nonverbal cues that instructor elicit responses.

On average, verbal instruction/direction occurred 46.79 times at the middle school level, 45.08 times at the high school level, resulting in a mean of 45.94 times for the two levels combined. Middle school orchestra directors spent 6 minutes 23 seconds (or 31.87% of the observed time) on verbal instruction/direction, while high school orchestra directors spent 4 minutes 44 seconds (or 23.65% of the observed time), resulting in a mean of 5 minutes 33 seconds (or 27.76% of the observed time) for the two levels

combined. Verbal instruction (direction) included giving verbal instruction that deals with specific musical attribute of the performance at hand.

In the category of non-interactive listening, the report indicated that in the time frame of 20 minutes 2 seconds on average, the middle school orchestra teachers engaged in this teaching behavior 15.92 times, while high school orchestra teachers engaged 12.04 times, resulting in a mean of 13.98 times for the two levels combined. In the same time frame, results indicate that on average, middle school orchestra teachers spent 2 minutes 8 seconds (or 10.71% of the observed time), and high school orchestra teachers spent 1 minute 43 seconds (or 8.63% of the observed time), resulting in a mean of 1 minute 56 seconds (or 9.67% of the observed time) for the two levels combined. Non-verbal listening included teaching behaviors in which participants purposely listened to students performance without taking active part in it. This included “beating the time,” but it did not include conducting gesture, facial expression or eye contact.

Feedback behaviors were observed either as nonverbal or verbal behaviors. The results indicated that in a time frame of 20 minutes 2 seconds on average, orchestra directors at the middle school level engaged in nonverbal feedback 7.88 times, and at the high school level 10.25 times, resulting in a mean of 9.06 times for the two levels combined. The report indicated that in the same time frame, on average, middle school orchestra teachers spent 26 seconds (or 2.17 % of observed time) on nonverbal feedback, high school orchestra teachers spent 32 seconds (or 2.67% of the observed time), resulting in a mean of 29 seconds (or 2.42% of the observed time) for the two levels combined. Nonverbal feedback included teacher providing nonverbal reaction to student performance or behaviors that reinforced, shaped, or changed further student responses.

On average, verbal feedback occurred 25.88 times at the middle school level, 31.58 times at the high school level, resulting in a mean of 28.73 times for the two levels combined. Middle school orchestra directors spent 2 minutes 20 seconds (or 11.65% of the observed time) on verbal feedback, high school orchestra directors spent 2 minutes 11 seconds (or 10.93% of the observed time), resulting in a mean of 2 minutes 15 seconds (or 11.29% of the observed time) for the two levels combined. Verbal feedback included teacher providing verbal reaction to students performance or behaviors that reinforced, shaped, or changed further student responses.

The frequency and the amount of time spent on conceptual teaching behaviors were of particular interest to this study. The results indicated that in a time frame of 20 minutes 2 seconds, on average, middle school orchestra directors engaged in conceptual teaching behaviors 3.67 times, high school directors 1.79 times, resulting in mean of 2.73 times for the two levels combined. In the same time frame middle school orchestra teachers spent 1 minute 29 seconds (or 7.40% of observed time), high school orchestra teachers spent 38 seconds (or 3.21 % of observed time) for the total of 1 minute 3 seconds (or 5.30% of observed time) for the two levels combined. The analysis of raw data revealed that three participants (one participant for middle school and two participants for high school) used no conceptual teaching as operationally defined. Conceptual teaching behaviors included verbal behaviors (explanations, questions, answers) that reinforce or introduce a concept in such a way that the student is given opportunities for awareness and understanding with a potential for transfer.

As illustrated in Figure 1, participants in this study spent most of the rehearsal time on nonverbal instruction (a little over 28% of the observed time) followed by verbal

instruction (a little under 28% of the observed time). The next most-represented teaching behavior was nonmusical behavior (a little under 15% of the observed time) followed by verbal feedback (a little over 11% of the observed time). Non-interactive listening was the fifth most-represented behavior (a little under 10%) followed by conceptual teaching (a little over 5% of the observed time). Lastly, participants used the least amount of time on nonverbal feedback (a little over 2% of the observed time). The sum of the two categories of verbal behaviors (verbal instruction and verbal feedback) revealed that the orchestra teachers spent approximately 39% of rehearsal time on some form of verbal behavior.

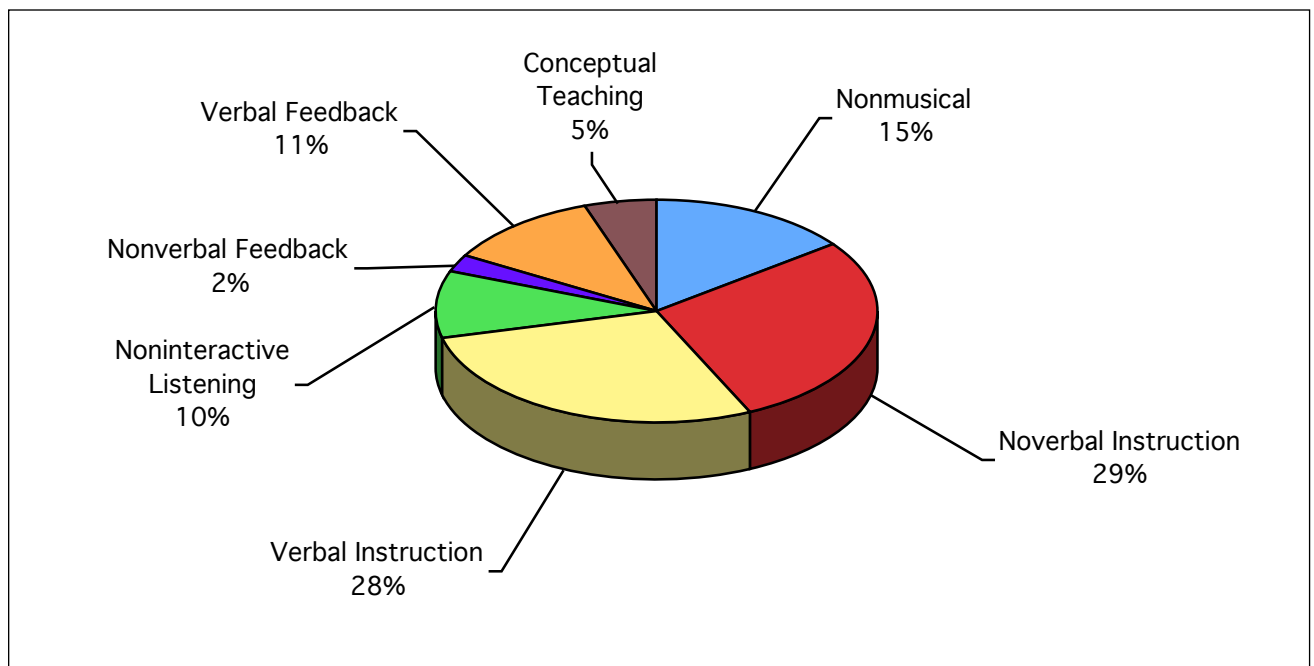
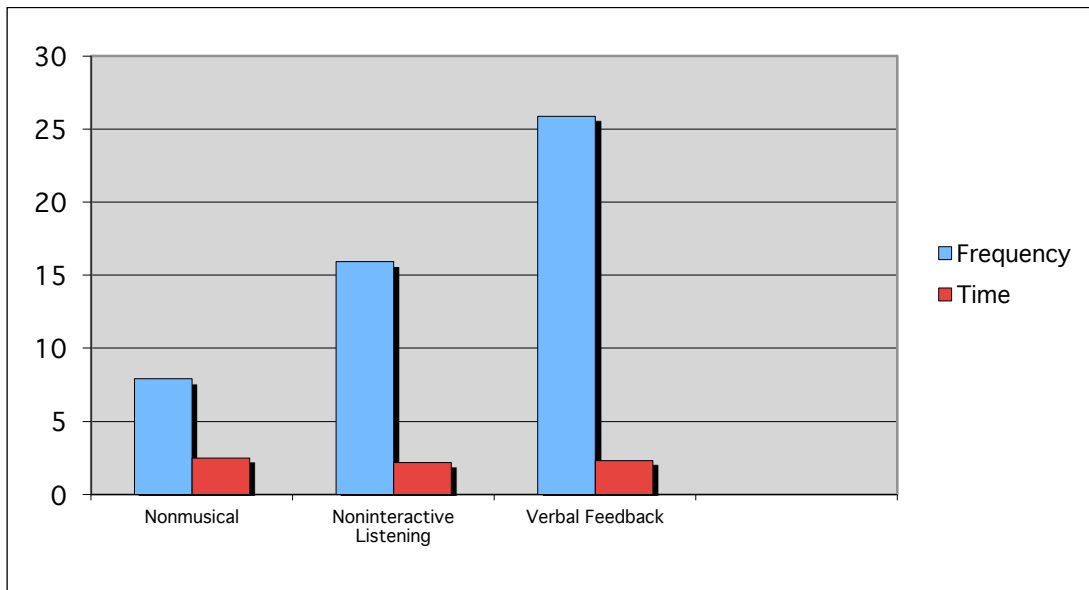


Figure 1. Percentage of time spent on seven teaching behaviors.

This graph illustrates the use of time of middle and high school orchestra directors' combined on the seven specific teaching behaviors.

As illustrated in Figure 2, a comparison of the behaviors with similar use of time at the middle school level revealed some interesting differences in frequencies for the same behaviors. For example, while the use of time for nonmusical (2 minutes 29

seconds), non-interactive listening (2 minutes 8 seconds) and verbal feedback (2 minutes 20 seconds) appears to be very similar, the frequencies for those three behaviors are very different. In a very close time frame (approximately two minutes), nonmusical behavior was observed about seven times, non-interactive listening about 15 times, and verbal feedback about 25 times. It appears that while middle school teachers spend approximately the same amount of time on those three teaching behaviors, they engage in them for a different number of times, resulting in a different length of time used every time they engage in those teaching behaviors. In the time frame of about two minutes, middle school teachers provide many short episodes of verbal feedback (about 25 times), followed by fewer but longer in duration episodes of non-interactive listening (about 15 times), and even fewer and shorter episodes of nonmusical behaviors (about seven times).

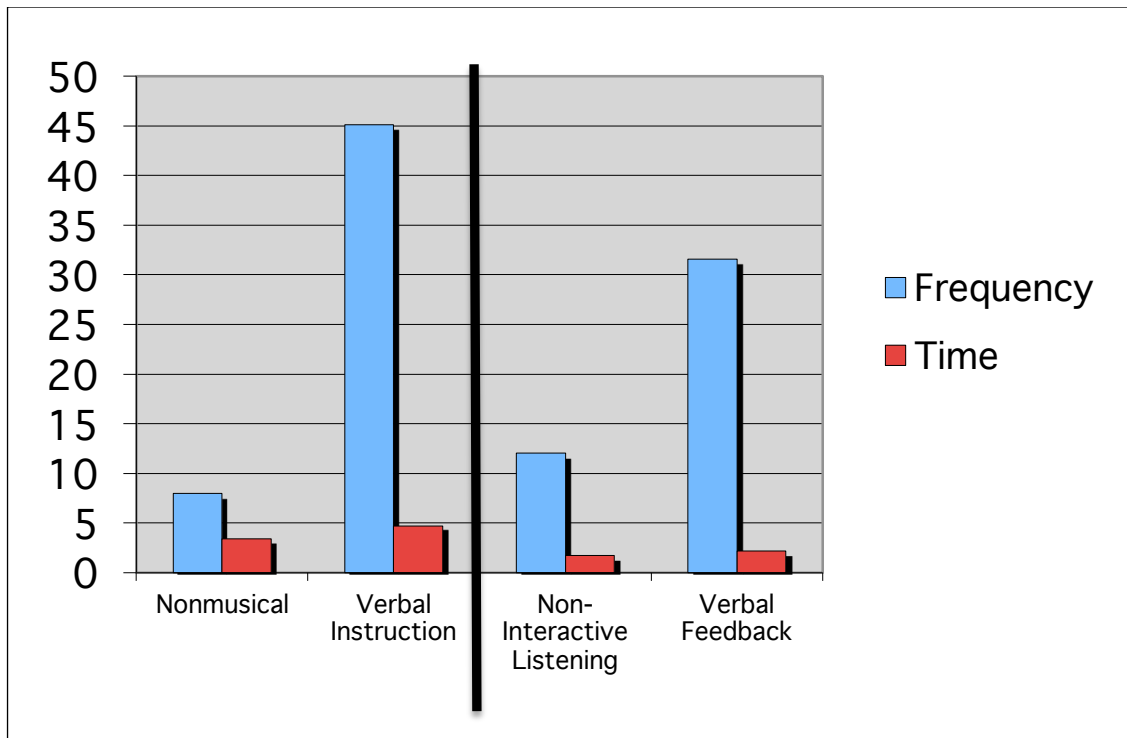


*Figure 2.* Middle school comparison of frequency and time for three behaviors. This graph illustrates differences between use of time on nonmusical behaviors, non-interactive listening and verbal feedback and frequencies of the same behaviors as they occurred during the middle school orchestra rehearsals.

As illustrated in Figure 3, a comparison of behaviors with similar use of time at the high school level revealed even larger differences in frequencies for the same behaviors. For example, while the use of time for nonmusical behavior (3 minutes 24 seconds) and verbal instruction (4 minutes 44 seconds) appears to be close, the frequencies for those two teaching behaviors are very different. In the same average time frame, nonmusical behavior was observed about 8 times and verbal instruction about 45 times. It appears that while high school orchestra teachers spend approximately same amount of time on nonmusical and verbal instruction, they engage in those teaching behaviors for a different number of times, resulting in a different length of time used every time they engage in either teaching behavior. In the approximate time frame of three minutes, high school orchestra teachers provide many short episodes of verbal instruction (about 45 times) and fewer, but longer episodes of nonmusical behaviors (about 8).

A similar observation may be made for two other teaching behaviors at the high school level. While high school orchestra teachers spent approximately the same amount of time on non-interactive listening (1 minute 43 seconds) and verbal feedback (2 minutes 11 seconds), the number of times (the frequency) teachers engage in those two behaviors is quite different. In the time frame of approximately two minutes, high school orchestra teachers provide many short episodes of verbal feedback (about 31 times) and fewer, but longer, episodes of non-interactive listening (about 12 times).



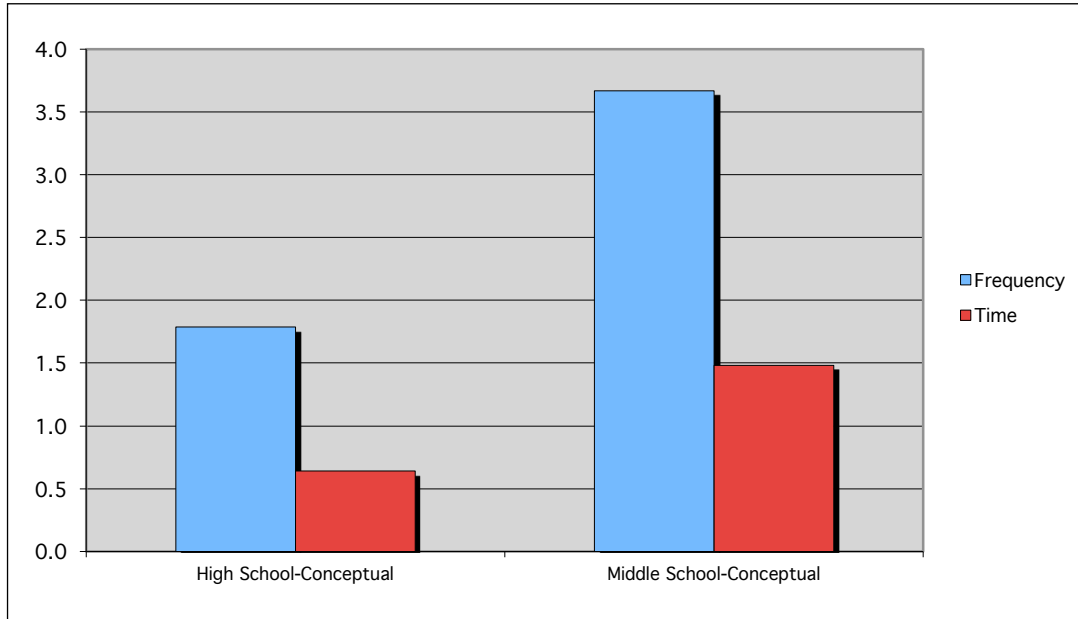


*Figure 3.* High school comparison of frequency and time for four behaviors.

The left side of the graph illustrates differences between use of time on nonmusical behaviors and verbal instruction, and frequencies of the same behaviors as they occurred during the high school orchestra rehearsals. The right side of the graph illustrates differences between use of time on non-interactive listening and verbal feedback and frequencies of the same behaviors as they occurred during the high school orchestra rehearsals.

As illustrated in Figure 4, a comparison of data between the two levels (middle and high school) revealed a noticeable difference between the average time that middle school participants engaged in conceptual teaching behaviors, in comparison to the average time spent by high school teachers. While middle school participants spent 1 minute 29 seconds, high school participants spent only 38 seconds on conceptual teaching. Middle school participants engaged in conceptual teaching almost twice as long. However, a comparison of frequencies for conceptual teaching at the two levels revealed that middle school orchestra teachers engaged in this teaching behavior about

three times while high school orchestra teachers engaged in conceptual teaching a little more than one time, meaning that the duration of episodes of conceptual teaching were approximately the same at both levels.



*Figure 4.* Comparison of conceptual teaching between high and middle school. This graph illustrates the difference in frequency and time spent on conceptual teaching by middle school and high school participants.

## **CHAPTER V**

### **DISCUSSION**

The purpose of this study was to investigate the frequency and time that middle and high school orchestra directors engage in seven specific teaching behaviors as operationally defined. The orchestra directors' time spent teaching conceptually was of particular interest to this study. Conceptual teaching was operationally defined as “a verbal behavior of [orchestra directors] in which the directors attempt to make students aware of, have an understanding of, and/or be able to transfer any musical concept” (Blocher et al., 1997, p. 457).

The findings of this study revealed that orchestra directors spent most of their instructional time on nonverbal instruction (direction) followed by time on verbal instruction (direction). These two behaviors, when combined, occupied more than half of the regular rehearsal time. Further findings revealed that orchestra directors used a considerable amount of time on nonmusical behaviors, followed by verbal feedback. Directors utilized much less time on non-interactive listening and nonverbal feedback. While the time spent on conceptual teaching was low, it is encouraging that conceptual teaching was not the least represented teaching behavior among orchestra teachers. The most interesting finding of the study was that middle school orchestra directors used more time on conceptual teaching than high school orchestra directors. The most concerning finding of this study was the significant amount of time orchestra directors

used on nonmusical behaviors, especially when this time is compared to the very limited time they used on non-verbal feedback and conceptual teaching.

When compared to the time spent on the other teaching behaviors observed in this study, nonverbal instruction (direction), operationally defined as conducting and other expressive physical gestures, was the most prominent teaching behavior among orchestra directors. This supports the findings of a substantial number of studies on the use of time in secondary music classes (Brendell, 1996; Caldwell, 1980; Carpenter, 1989; Hendel, 1995; Witt 1986; Yarbrough & Price, 1981, 1989), which all found that most of the instructional time in secondary music classes is spent on students' performance and other forms of nonverbal instruction. Goolsby (1996) investigated the use of time in instrumental rehearsals taught by experienced, novice, and student teachers, and he found that all three groups of teachers used more than half of the class time on performance and musical instruction. The finding of the present study, however, is somewhat inconsistent with MacLeod's (2010) findings; she investigated 12 teaching strategies used by experienced band and orchestra teachers when teaching beginning ensembles an unfamiliar song and found conducting to be the third most represented teaching activity among band directors, and only the sixth most represented teaching strategy among orchestra teachers.

One possible reason secondary orchestra classes spend most of the time on nonverbal instruction (direction) could be related to performance being traditionally viewed as a favorable approach to music education at the secondary level of schooling. Additionally, this finding may be discussed in light of the evidence provided during a *post hoc* interview with the study's independent observers. During this interview, the

observers acknowledged an agreement they made after their initial training and viewing of the pilot study video segment that nonverbal instruction involved not only conducting and facial expressions, but also instrumental and vocal modeling (singing). These additional subcategories were added to the operational definition by the independent observers because vocal and instrumental modeling appeared to be a prominent behavior among participants in this study, and the independent observers needed to place these behaviors in one of the existing behavioral categories; the nonverbal category seemed to be the most appropriate place. Adding instrumental and vocal modeling to the nonverbal category could certainly have increased the time on this behavior in present study.

The finding of this study that verbal instruction (direction) was the second most represented behavior during the orchestra rehearsal is consistent with several studies on the use of time on verbal instruction in secondary music classes (Goolsby, 1996, 1997; Witt 1986). Like this study, these studies revealed that “teaching episodes” including verbal instruction represent the second most prominent teaching activity. On the other hand, MacLeod (2010) reported verbal instruction as the most frequently used instructional strategy for both band and orchestra teachers. Consistent with MacLeod’s findings on verbal instruction, Colprit (2000) reported that in applied lesson settings, Suzuki string teachers used most of the instructional time on teacher verbalization (45%). Whether verbal instruction is the most prominent teaching activity as found in MacLeod (2010) and Colprit (2000) or the second most represented teaching behavior as found in this study and the Goolsby (1996, 1997) and Witt (1986) studies, the conclusion may be drawn that secondary music teachers use a considerable amount of time on verbal

instruction, probably because conveying musical information to students through musical means may not be a sufficient way of instructing.

In comparing the time spent on verbal and nonverbal instruction (direction) by middle and by high school participants in this study, an interesting difference between the two groups emerged. Middle school orchestra directors used considerably more time on verbal instruction (direction) and less time on nonverbal instruction (direction), and vice versa. It could be suggested that middle school teachers need more time for verbal instruction than for conducting or performing because of the students' fewer years of training on their instruments and the level of music they play. The finding that the teachers of younger students use more time for verbal instruction is consistent with Colpritt (2000) and Duke (1999), who examined the activities of students and teachers in Suzuki studios (suggesting students of younger age), and who reported high rates of teacher verbalization.

While the average percentage of time devoted to conceptual teaching (5.30%) seems low, especially when compared to the time used on nonmusical behaviors (14.70%), this figure is actually a little higher than figures reported in other studies that were concerned with the use of time on various strategies aimed towards the development of higher level thinking skills for students (Strauser, 2008; Watkins, 1993, 1996), or with the use of time spent on conceptual teaching itself (Blocher et al., 1997). These studies reported even lower percentages of time used on this teaching behavior.

For example, Strauser (2008), who examined the content of verbalization of expert high school choir directors in relation to the development of students' higher levels

of thinking, reported that minimal instructional time of 4.3% was devoted to conceptual verbalization. Blocher et al. (1997), who investigated the use of time spent on seven teaching behaviors with a focus on time used for conceptual teaching, reported that middle and high school band directors used only 2.79 % of time on conceptual teaching.

Probably the most interesting finding of this study in regard to conceptual teaching was that middle school orchestra directors used over twice as much time (1 minute and 29 seconds) on conceptual teaching than high school orchestra directors (38 seconds) did. This finding is contrary to Watkins (1993, 1996) who studied the use of nonperformance time in regard to time spent on developing students' higher level thinking skills, and who found the exact opposite: high school choir directors used more time (1.30%) than middle school directors (0.84%) on this kind of teaching.

The finding of this study in regard to conceptual teaching and orchestra levels (middle or high school) could be due to the greater need of middle school students for verbal explanation of musical concepts, as they are just beginning to be exposed to them. This assumption is exemplified in string method books that are primarily designed for use in middle schools and beginning high school orchestras in which the authors--string education specialists--provide pages of suggestions on teaching musical concepts, as well as suggestions for teaching playing techniques in conceptual ways. At the same time, high school music ensembles tend to spend most of their class time in performance, which possibly leaves them with less time for teaching concepts or teaching conceptually. Using more time on performance at the expense of conceptual teaching, however, can't justify the low percentage of time used for this kind of teaching. Several studies (Garafolo & Whaley, 1979; Hendricks, 2010) showed that students in performance

classes that utilized conceptual strategies not only developed a higher degree of understanding of the structural elements of music, but also improved the quality of their performance through conceptual learning.

The most concerning finding of this study was the considerable amount of time orchestra directors engaged in nonmusical behaviors, with high school directors spending more time on this behavior than middle school orchestra directors. This data supports assertions by Karwet and Slavin (1981), who found that much of the mandated instructional time across all academic subjects during the school day is lost through interruptions, late starts, recess, lunch, and transitions. This finding is also in accordance with Witt (1986), who investigated the use of time during secondary band and orchestra rehearsals; she found that, as in this study, “getting ready” time was the third most represented time. In his study on the use of time among experienced, novice, and student band teachers, Goolsby (1996) found that the use of time on non-teaching activities (time spent in preparation, initial and final talk, breaks between musical selections, and the dismissal period) was affected by the teaching experience of the participants.

One of the subcategories of “getting ready” activities in Witt's study was tuning instruments. She reported that almost half of the “getting ready” time was used for tuning, with orchestra classes using almost twice as much time on tuning string instruments compared to time used on tuning band instruments. Witt's findings were confirmed by MacLeod (2010), who compared instructional strategies used by experienced band and orchestra teachers, and who found a significant difference in the amount of time that band and orchestra teachers spend on tuning the ensembles.



While measuring the use of time on tuning instruments was not an objective of this study, in a post hoc interview, the independent observers noted that tuning instruments took a considerable amount of time during some observed instructional segments. Because there was no preset behavioral category in which to place tuning, the independent observers mutually agreed to place tuning in the nonmusical behaviors category. This could be yet another explanation why orchestra directors in this study spent such a significant amount of time on nonmusical behaviors.

The least represented teaching behavior in this study was nonverbal feedback, as it occupied only 2.42 % (or 29 seconds) of the instructional time. The only other study that investigated the use of time on nonverbal feedback was Blocher et al. (1997), and in that study, researchers found that middle and high school band directors used even less time on this behavior (1.21%). These findings are in accordance with several studies that investigated the use of time spent providing feedback in secondary music classes (Cavitt, 1998; Goolsby, 1997; Price, 1989), all of which suggest that secondary music teachers tend not provide feedback on students' performance.

It is widely accepted that teacher feedback is a primary component of effective instruction in all disciplines. As research has shown, not only is the student's acquisition of knowledge and musical performance positively affected by the teacher's feedback (Broofy & Good, 1986; Salzberg & Salzberg, 1981; Price, 1983), but also student attentiveness and attitude are largely dependent on teacher reinforcement (Price, 1989; Price & Yarbrough, 1991,1993; Yarbrough & Hendel, 1993). Providing more feedback appears to be an effective way to affect the students' learning positively, even when (somewhat paradoxically to findings on feedback in other academic areas) the feedback is

negative. A systematic observation of the effect of negative feedback on students' on-task behavior in music performance settings revealed that despite high rates of negative feedback, students in performing classes continue to work hard and stay on task (Yarbrough & Price, 1981, 1989), a phenomenon that needs further investigation (Duke & Henninger, 1998).

### **Limitations and Strengths of the Study**

The findings of this study should be taken with caution for several reasons. First, the number of participants in this study was very limited and not sufficient for any generalization of the study's findings. In addition, the participants were selected in a convenient way and not through random selection; therefore, they may not represent a typical sample of the orchestra directors' population. Lastly, participants were recruited from a limited geographical area, and it is possible that conducting the same study in a different geographical area, possibly with a different degree of emphasis on performance, would provide different results.

Several other limitations are worth noting. This study was the replication of a study done in the band teaching world, and the selection and operational definitions of the seven teaching behaviors might be more applicable for band teachers than for orchestra teachers. It appears that tuning instruments is an important behavior for orchestra teachers, but that behavior was not part of any operational definition. Also, it should be noted that training DVD created by the investigator wasn't submitted to an independent review committee to establish its reliability. In addition, as the independent observers suggested, modeling (vocal and with instrument) was a prominent teaching

behavior among orchestra teachers, but such a behavior was not included in the seven operational definitions of the model study.

The main strength of this study lies in its methodology, as it is detailed and precise, providing the reader with sufficient information in case of a need for replication. The second strength of the study is that it focused on teaching behaviors of orchestra directors only, and that it covered a comprehensive set of teaching behaviors, including conceptual teaching. Lastly, while the study's findings can't be generalized due to a limited number of participants this study did provide interesting insights into orchestra teaching that could be of use to practicing teachers as well as researchers.

### **Implications for Further Research**

A substantial amount of systematic research on various variables in music classes has been done in other performance-oriented classes, but not in orchestra. The research in orchestra settings is usually limited to an investigation of teaching methods, and it is rarely systematic, as the findings of those studies stand isolated and are rarely supported by another similar study.

One of the possible reasons for such a limited number of studies in orchestra settings could be the difficulty in providing a sufficient number of participants, as the number of school orchestras and orchestra teachers is much more limited than the number of school bands and choirs. A suggestion to help solve this problem would be that during professional conferences (e.g., the American String Teachers Association [ASTA] Conference or the Suzuki Association of Americas [SAA] Conference), which are typically attended by many string and orchestra teachers from across the country, string

education researchers could organize sessions on research in string teaching, share current and relevant research findings with orchestra teachers, and present their proposals for further studies. The benefits of this approach would be twofold: orchestra teachers could learn about current research and possibly use the findings in their classes, and researchers could recruit potential participants for future studies.

Another suggestion for further research would be to conduct more descriptive studies on the use of time and teaching behaviors in only orchestra settings which could close the gap in current music education research between orchestra classes and other music education settings. Such studies could identify the teaching behaviors that are unique to orchestra settings, and each of those behaviors could be an objective for further studies. Finally, the experimental studies could contribute to the understanding of orchestra teaching intricacies further.

### **Implications for Teaching**

The findings of this study prompt a number of implications for teaching. The amount of time used on nonmusical behaviors in this study was concerning, especially when compared to the amount of time used on non-interactive listening, nonverbal feedback, and conceptual teaching. If part of the problem, indeed, is the amount of time orchestra teachers spend on tuning instruments, then measures to make that process shorter need to take place. Teachers of methods courses at the college level can provide future teachers with more techniques and strategies for tuning string instruments more efficiently. Practicing teachers should take all measures to prevent long periods of tuning.

They should ensure that students' tuning devices such as pegs and fine tuners are all in optimal working condition.

In addition, orchestra teachers need to maximize the time they use on verbal and nonverbal feedback, as feedback seems to be an important link toward positive learning outcomes. Moreover, college courses on classroom management and methods should make pre-service teachers aware of the positive correlation between feedback and the students' behavioral and learning outcomes. Furthermore, college students should be aware of different types of feedback (e.g., positive and negative, or corrective) and different ways of giving feedback (verbal or nonverbal); they should also have an opportunity to experience giving feedback and to practice complete cycles of *sequential patterns*. Most importantly, practicing teachers should understand that proactive teaching (the teaching in which teachers set the learning in a way that students can experience success), and not reactive teaching (the teaching in which teachers just react to students' performance), is what leads to the opportunity for the teacher to give more positive feedback.

The reasons for the low percentage of time music teachers devote to conceptual teaching are likely to be complex and numerous. It is possible that music teachers simply lack the training on how to teach conceptually as, according to Goodlad (2004), most teachers in all academic areas do. Furthermore, teachers may not be aware of the importance and developmental appropriateness of conceptual teaching at middle and high school levels, due to the lack of knowledge in developmental and learning theories, as courses that instruct those theories (e.g., educational psychology) possibly are not available or required for music education majors at many universities and colleges. The

most significant reason, however, might be that overemphasizing the value of performance in secondary music education environments may discourage music teachers from even trying teaching strategies that, in the traditional view of teaching, may divert from performance objectives.

While it appears that orchestra teachers do use more time on conceptual teaching than band or choir teachers, in order to utilize even more instructional time in the service of this teaching strategy, orchestra teachers should be more aware of the importance and developmental appropriateness of this kind of teaching at middle and high school levels, and they should also learn and practice conceptual teaching strategies. Functioning at higher cognitive levels seems to be a requirement for success in college and later in the real world; middle and high school orchestra teachers must do their part to develop students' higher level thinking skills.

## **Conclusion**

Even with the limited scope and applicability of its findings, this study did provide intriguing information on the teaching behaviors of orchestra directors. The amount of time used on nonmusical behaviors is a concern, but solutions to this problem seem to be feasible as long as teachers are aware that they are using a substantial amount of time on nonmusical behaviors, and as long as researchers keep investigating the solutions to the problem. The amount of time that orchestra teachers use on conceptual teaching seems to be promising as it is higher than in other performance-oriented music classes, but teachers should strive for learning more about it and using it more in their classes. At the same time, researchers should keep investigating and experimenting in

order to bring this kind of teaching closer to practicing teachers for the benefit of students and their future.

**APPENDIX A**  
**PARTICIPANT FORMS**



## Recruitment Letter

Dear Middle and/or High School Orchestra Directors:

My name is Dijana Ihas and I am a PhD student in Music Education at the University of Oregon (UO.) I am writing to invite you to participate in a research study about teaching behaviors among middle and high school orchestra directors. You are eligible to participate in this study because you teach orchestra at the middle or high school level and you teach in one of the following states: Washington, Oregon, or California. I obtained your contact information either from the American String Teachers Association (ASTA) active string teachers list, from your school district's website, or through a personal contact.

If you decide to participate in this study, you will be requested to:

1. Read this recruitment letter and confirm your willingness to participate in this study via e-mail by **January 20, 2011**.
2. Indicate your preferred recording storage device (e.g. digital video tape (please indicate type, for example *mini*, *mini dv8*, etc.), CD or DVD, or USB thumb drive)) via-email also by **January 20, 2011**.
3. Read and sign a consent form, video release form, answer a two- question questionnaire, and read the recording directions. (You'll receive those forms soon after you confirm your willingness to participate in this study.)
4. Mail signed forms and completed questionnaire to the investigator by **January 27, 2011**.
5. Video record two of your regular orchestra rehearsals in accordance to the specified recording steps, in their entirety, within the time frame of one week.

6. Mail media storage devices to the investigator by **January 27, 2011** in the provided pre-stamped, pre-addressed padded envelope.

Your anonymity will be carefully protected and your name will not be used in connection with any information collected.

Remember, your decision to participate in this study is completely voluntary. If you are indeed interested in participating, or have any questions about the study, please contact me at [dihas@uoregon.edu](mailto:dihas@uoregon.edu) or (xxx) xxx xxxx by **January 20, 2011**.

In order for you to avoid any out-of-pocket expense, I am offering to mail you the recording storage device of your choice (e.g., digital video tape, CD or DVD, or USB thumb drive.) Please indicate which recording storage device you prefer to use, along with your mailing address, via email also by **January 20, 2011**.

Thank you for your consideration and prompt reply to this letter.

Sincerely,

Dijana Ihas

## **Consent Form**

Dear Middle and/or High-School Orchestra Director:

You are invited to participate in a research study conducted by Dijana Ihas, a PhD student in music education from the School of Music and Dance at the University of Oregon (UO.) The purpose of this study is to investigate teaching behaviors as exhibited by orchestra directors in rehearsal settings. Additionally, this study will serve as part of Ms. Ihas's dissertation. You were selected as a possible participant because you teach middle or high school orchestra in one of the following states: Washington, Oregon, or California.

If you decide to participate you will need to:

1. Read and sign the attached consent form, attached video release form, answer a two-question questionnaire, and read the recording directions.
2. Mail signed forms and completed questionnaire to the investigator by **December 15, 2010**.
3. Video record two of your regular orchestra rehearsals in the accordance to the specified recording directions, in their entirety, within the time frame of one week.
4. Mail labeled media storage devices to the investigator by **January 21, 2011** in the provided pre-stamped, pre-addressed padded envelope.

Besides the time spent on the recording of two of your regular rehearsals, it is my estimation that it will not take longer than 45 minutes of your time to complete all the above steps.

Your anonymity will be completely protected and your name will not be used in connection with any information collected. Your participation is voluntary. Your decision whether to participate will not affect your relationship with the researcher, ASTA, or the University of Oregon (UO.) If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions, please feel free to contact me at [dih@uoregon.edu](mailto:dih@uoregon.edu) or by phone at (xxx) xxx xxxx. For further information about this research, you may contact my academic advisor, Dr. Frank Diaz, at [fdiaz@uoregon.edu](mailto:fdiaz@uoregon.edu) or (xxx) xxx xxxx..

If you have questions regarding your rights as a research subject, contact the Office for Protection of Human Subjects, University of Oregon, Eugene, OR 97403, (xxx) xxx xxxx. This office oversees the review of the research to protect your rights and is not involved with this study.

Your signature indicates that you have read and understood the information provided above, and that you willingly agree to participate. Your signature also indicates that you understand your right to withdraw your consent at any time and discontinue participation without penalty, that you have received a copy of this form, and that you are not waiving any legal claims, rights, or remedies.

Please read, sign, and date the statements below.

1. I agree to take part in this project. I understand and accept all requirements. I know that I can cease my participation at any time.
2. I agree to mail the signed consent form, video release form, and questionnaire to the investigator by **December 15, 2010**.

3. I agree to videotape two of my regular rehearsals in accordance to the specified recording directions, in their entirety, within one week and mail the recordings back to the investigator by **January 21, 2011**.

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Signature \_\_\_\_\_ Date \_\_\_\_\_

Your full name: \_\_\_\_\_

Your full title: \_\_\_\_\_  
(e.g., middle-school orchestra director, etc.)

Your e-mail address: \_\_\_\_\_

Your phone number: \_\_\_\_\_

## **Cover Letter for Questionnaire**

You are invited to participate in a research project designed to investigate teaching behaviors as exhibited by orchestra directors in rehearsal setting. The project is being conducted by Dijana Ihas, a PhD student in music education enrolled at the School of Music and Dance at the University of Oregon (UO.) This study will serve as Ihas' PhD dissertation. The findings of this study may be valuable and helpful in furthering our understanding of teaching behaviors as demonstrated during orchestra rehearsals.

It should take no longer than five minutes to complete this short questionnaire. Your participation is voluntary. If you do not wish to participate, simply discard the questionnaire. Responses will be completely anonymous; your name will not appear anywhere on the survey. Completing and returning the questionnaire constitutes your consent to participate.

Keep this letter for your record. If you have any questions regarding the research, contact the School of Music and Dance, 1225 University of Oregon, Eugene, OR 97403-1225, or you may directly contact my academic advisor Dr. Frank Diaz at [fdiaz@uoregon.edu](mailto:fdiaz@uoregon.edu) or (xxx) xxx xxxx. If you have any questions regarding your rights as a researcher subject, please contact the Office for Protection of Human Subjects at the University of Oregon, (xxx) xxx xxxx. This office oversees the review of the research to protect your rights and is not involved with this study.

Thank you again for your help.

Sincerely,

Dijana Ihas

## Questionnaire

DIRECTIONS: Please circle the best answer.

1. What grade level are you teaching orchestra class?

*Middle School*      *High School*      *Combined*

2. In what state do you teach?

**Washington**      **Oregon**      **California**

## Video Release Form

I have received an adequate description of the purpose and procedures for video recording sessions during the course of the proposed research study.

I, \_\_\_\_\_, give my consent to be video recorded during participation in this study, and for those video recordings to be viewed by persons involved in the study. I understand that all information will be erased after the study has been completed. I further understand that I may withdraw my consent at any time.

\_\_\_\_\_

Participant's signature

\_\_\_\_\_

Date



## **Thank You Letter**

Dear Middle and/or High School Orchestra Director:

I would like to confirm that I have received all of the requested forms and materials. Your generous effort to complete this task within the given time frame has enabled me to proceed to the next step of my study: investigation and data analysis.

I would like to thank you for all of the support, time, and effort you have put into this project. It is greatly appreciated and as a courtesy, once the study is completed, I will share my findings with you.

I wish you all happiness and a most successful school year!

Sincerely,

Dijana Ihas

**APPENDIX B**  
**METHODOLOGY FORMS AND MATERIALS**

## **Recording Directions**

1. Place provided coded labels on the media storage device you will be using (e.g., HS1R1 for the first recorded rehearsal, HS1R2 for the second recorded rehearsal, etc.) prior to the start of each recording session.
2. Make sure that the capacity of your media storage (e.g., digital video tape, CD/DVD or USB thumb drive) is sufficient to cover the entire length of your rehearsal.
3. Prior to each recording session, test your recording device for its functionality and reliability. When students come into the classroom, no instructional time should be used to set up the equipment for this study. The students should be aware of the recording procedures as little as possible.
4. The camera should be in a position that is most conducive for optimal recording of the director's behaviors. The proper placement of the camera is behind the group and in front of the director, so that students are not captured at all and the focus is on the director's face and body only.
5. The starting time for the recording of the rehearsal should be the moment the school bell rings to begin the period and the ending time should be the sound of the school bell at the end of the period.
6. At the end of the rehearsal take the media storage device out of the camera, and if possible, transfer the footage into a computer based format (DVD or USB thumb drive.)
7. Place recording in the provided padded envelope.
8. Repeat all steps for the second recording.
9. Mail labeled storage devices with two recorded rehearsals in a pre-stamped, pre-addressed envelope by the agreed deadline.

## Materials

Materials used in this study:

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<b>Material</b>	<b>Items</b>
<b>Recruiting / correspondence materials</b>	<ul style="list-style-type: none"><li>• Recruitment Letter</li><li>• Consent Form</li><li>• Cover Letter for Questionnaire and Questionnaire</li><li>• Video release form</li><li>• Follow up Letter</li><li>• Thank You for Participation Note</li></ul>
<b>Mailing materials</b>	<ul style="list-style-type: none"><li>• Padded envelopes</li><li>• Recording medias</li><li>• Labels</li><li>• Stamps</li><li>• Printing paper</li></ul>
<b>Materials/Equipment needed by researcher</b>	<ul style="list-style-type: none"><li>• Recording medias (analogue, digital, CD/DVD, Digital Files)</li><li>• Computer /printer</li><li>• Software: MPEG Streamclip, QuickTime, iMovie and SCRIBE</li></ul>
<b>Equipment needed by participants</b>	<ul style="list-style-type: none"><li>• Video recording system</li><li>• Computer</li></ul>
<b>Equipment needed by observers</b>	<ul style="list-style-type: none"><li>• Computer with SCRIBE programmed for the needs of this study</li><li>• Printer</li></ul>
<b>Materials for Independent Observers</b>	<ul style="list-style-type: none"><li>• Script with operational definitions of seven teaching behaviors</li><li>• Training DVD</li><li>• Folders</li></ul>

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## **APPENDIX C**

### **INDEPENDENT OBSERVER FORMS AND MATERIALS**

## **Recruitment Letter for Independent Observers**

Hello Mr./Mrs. \_\_\_\_\_,

My name is Dijana Ihas and I am a PhD student in Music Education at the School of Music and Dance at the University of Oregon (UO). I am writing to invite you to serve as one of two independent observers in a study about teaching behaviors among middle and high school orchestra directors. You were selected for this role upon the recommendation of the instrumental performance and string pedagogy professor.

You might be eligible to take part in this study if you satisfy all four criteria as follow:

1. You are a string instruments specialist with at least a Bachelor's degree in instrumental performance/pedagogy on at least one string instrument.
2. You have at least three years of successful teaching experience, either in a applied studio or public-school teaching situation.
3. You are willing to take an on-line CITI training course.
4. You are able and willing to commit approximately eleven hours to this project between November 2010 and February 2011.

If the criteria above fit your profile and you are willing to take part in this study you'll be asked to:

1. Read this recruitment letter.
2. Confirm your eligibility and willingness to participate in this study via e-mail ([dihas@uoregon.edu](mailto:dihas@uoregon.edu)) or phone (xxx) xxx xxxx by November 15, 2010.
3. Take an on-line CITI training course by November 30, 2010 (Data Analyst Module: with a required post-test, training takes approximately two hours.)
4. Attend mandatory training with the primary investigator by December 10, 2010. (Training on use of SCRIBE, training on recognizing teaching behaviors, and post-test take approximately three hours; day and time to be selected at your convenience.)
5. Watch approximately three hours of the video-recorded materials in the role of the independent observer in between February 1 - February 17, 2011.

(Watching the video while selecting teaching behaviors will take approximately three hours; days and times for this step to be selected at your convenience; to avoid fatigue, which may influence the results of your observations, those three hours need to be divided in two or three sessions.)

6. Submit printed results to the primary investigator by February 18, 2011.

Your anonymity will be carefully protected and your name will not be used in connection with any information collected.

Remember, your decision to participate in this study is completely voluntary. If you have any questions, please feel free to contact me at [dihas@uoregon.edu](mailto:dihas@uoregon.edu) or by phone at (xxx) xxx xxxx. For further information about this research, you may contact my academic advisor, Dr. Frank Diaz at [fdiaz@uoergon.edu](mailto:fdiaz@uoergon.edu) or by phone at (xxx) xxx xxxx.

Please confirm your eligibility and willingness to participate in this study via email ([dihas@uoregon.edu](mailto:dihas@uoregon.edu)) or phone (xxx) xxx xxxx by November 15, 2010.

Thank you for your consideration and prompt reply to this letter.

Sincerely,

Dijana Ihas

## **Explanation of Operational Definitions of Seven Behavioral Categories to be Observed**

Please read carefully the explanations of seven behaviors you will be asked to observe before each viewing session. If you have any questions, feel free to discuss it with another observer.

### *Nonmusical behaviors:*

- Teacher disciplines students
- Down time (getting ready, teacher performs administrative tasks)
- Nonmusical directions (e.g., “Close the door,” “Take your hat off,” “Listen to the announcements”)
- Announcements
- Interruption from office, messengers, visitors

### *Nonverbal Instruction (Direction):*

- Teacher gives instruction through proactive conducting (e.g., attentive, helpful gestures, eye contact)
- Teacher’s facial expressions, body language, and other nonverbal cues instruct or elicit responses.

### *Verbal Instruction (Direction):*

- Teacher gives verbal instructions or directions that deal with specific musical attributes of the performance at hand (e.g., “Take the repeat at letter D,” “Third trumpets, play louder in measure 42”)



*Non-interactive Listening:*

- Teacher purposely listens to student performance but takes no active part in the performance
- Students playing with no visible or aural teacher interaction
- Teacher beats time but does not attend to musical performance through conducting gesture, facial response, eye contact, or verbal response

*Nonverbal Feedback:*

- Teacher provides nonverbal reaction that is based on student response that reinforces, shapes, or changes further student responses
- Teacher responds in a nonverbal manner to something students do in such a way that the teacher lets the students know something about their performance

*Verbal Feedback:*

- Teacher provides verbal reaction to student response that reinforces, shapes, or changes further student performance
- Teacher verbally responds to something that students do in such a way that the teacher lets the students know something about their performance

*Conceptual Teaching:*

- Teacher's statements that could lead to development of students' awareness and understanding with a potential for transfer (e.g. "Whenever we see *tenuto* markings, they indicate that we must give the notes full value with a sustaining quality.")

- Teacher asks questions in such way that the answer contributes to the formulation of relationships, new ideas, or expansion of the categories (e.g., “Now that we’ve played through this piece several times, can anyone name the compositional style being used and how it differs from the Bach we played earlier?”)
- Teacher answers questions in such way that the answers relate to a broader array of instances than the one at hand (e.g., “Yes, that is a cadence, but in this instance it is a deceptive cadence. In a deceptive cadence, the dominant chord is followed by something other than the tonic.”)

## Working with SCRIBE

SCRIBE stands for: *Simple Computer Recording Interface for Behavioral Evaluation* (Duke & Stammen, 2007). Its purpose is to observe, measure and record behaviors in educational settings.

- Turn on computer
- Log-in with a provided password

Step #	Step	Step Help
1	<b>Open IHAS-Reliability folder</b>	You'll need to do this step every time you are working on this project. This is the folder with SCRIBE in it.
2	<b>Click on SCRIBE template to open it</b>	The template with the Firefox icon is the one you need.
3	<b>Open IHAS-Study Middle or High School folder</b>	Each folder (one for middle school and one for high school teachers) contains 12 twenty-minute long video clips. The idea is that you watch not more than an hour of those videos in one session because your perception may get tired.
4	<b>Select the movie file you are going to observe</b>	The movie files in gray shade need to be open with: Open – Open With- Quick Movie
5	<b>Start the video and subsequently click on “begin data entry.”</b>	<ul style="list-style-type: none"> <li>• Do those two steps quickly so that you don't lose some data.</li> <li>• Make sure that the timer is going on.</li> <li>• Simply click on the behavior in the little boxes every time you see it.</li> <li>• Remember that you do have an option to stop and think just don't forget to stop the movie too.</li> </ul>
6	<b>When you are finished collecting data, press “end data entry”.</b>	

7	<b>After you have entered all of data, click the “Review” tab. You will see a list of the data you have created.</b>	The columns will indicate the type of the behaviors and its frequency and duration. PRINT this page out. (This is a page with a long list of data, or several pages.)
8	<b>Then under “Display” from the pull-down menu pull select “summary”.</b>	This displays the page with a summary of specific data analysis such as frequency, rate, time, percentage of time. PRINT this page out. (This is a page with a short list of data – the summary.) <b>Staple</b> both pages and simply <b>write</b> the date and the name of the video clip you observed (e.g., Observer 1, Middle School Video 1, or 2, .... up to 12)
9	<b>To save your work, click the save tab and a box will appear. Click “Close Window”.</b>	<ul style="list-style-type: none"> <li>• Then go to “file” and scroll to “save as”</li> <li>• Name your work as “Observer 1 or 2”, Middle School Video 1, etc., Make sure it is saved as <b>web page complete</b>.</li> <li>• Save it in the red thumb drive.</li> </ul>
10	<b>REMINDER: You’ll need to print the results for each movie you observe. Click the “print” button under “review” tab to do so every time you do observation</b>	On March 4, after you finish all observations you’ll need to give me all printed copies..
11	<b>You can now close your browser window. It will inform you that your project has not been saved, but it has. Click “OK” and the browser should close.</b>	
12	<b>To re-open your SCRIBE file again follow step 1 from above.</b>	

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