THE EFFECT OF CRITICAL THINKING INSTRUCTION IN MUSIC LISTENING
ON FIFTH-GRADE STUDENTS' VERBAL DESCRIPTIONS OF MUSIC

by

Daniel Clinton Johnson

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ABSTRACT

The purpose of this study was to determine the effect of critical thinking instruction on the music listening skills of fifth grade students as measured by written responses to music listening examples. It was hypothesized that music listening instruction including opportunities for critical thinking (Critical Thinking Instruction, CTI) would be more effective than parallel instruction without critical thinking instruction (Activity-Based Instruction, ABI). CTI consisted of four components: musical terms and concepts, repeated music listening examples, responding activities, and opportunities for critical thinking. In contrast, ABI consisted of three components: musical terms and concepts, repeated music listening examples, and responding activities; ABI did not include opportunities for critical thinking. Both CTI and ABI treatments were taught concurrently by the same music teacher at the same school in a series of sixteen (16) forty-five (45) minute lessons. Two intact classes of subjects were randomly assigned to the CTI and the ABI treatment groups (n = 41 and 40, respectively). “Thinking and Listening,” a researcher-designed dependent measure, was administered as a pretest and a posttest. Subjects’ written responses were classified into three categories (i.e. musical, affective, and associative) and scored by three independent judges. Additionally, the Musical Aptitude Profile (Gordon, 1967/1995) was administered as a covariate.

Significant disordinal interaction effects in subjects’ responses by test by treatment were found such that CTI subjects demonstrated greater gains in musical term, associative, and total response scores from pretest to posttest than did ABI subjects. Additionally, significant main effect differences between treatment groups were found such that CTI subjects demonstrated higher musical term, affective, associative, and total response scores than did ABI subjects. Significant main effect within group differences were also found such that CTI subjects demonstrated significantly higher musical term, affective, associative, and total response scores on the posttest as compared to the pretest,
while no significant main effect differences were found in ABI subjects' response scores. The positive effects of the CTI treatment, however, should be interpreted with caution based on larger than expected standard deviations and departures from normal distributions. Implications include designing music listening instruction to incorporate critical thinking skills.
CHAPTER ONE: INTRODUCTION

Throughout the world, people listen to music. Sociologists report that music is a part of every culture on Earth (Etzkorn, 1989) and that music plays a meaningful role in both human society and well-being (VanderArk & Ely, 1991). Listening to music is an essential part of any musical activity (Hartshorn, 1957), pervades each of the “National Standards for Music Education” as contained in the 1994 Standards for Arts Education (Reimer, 2003), and is a prerequisite for musical pursuits (Madsen & Madsen, 1970). Live performances, radio, television, analog recordings, and digital media provide multiple opportunities for music listening.

The purposes for listening to music are varied, including intrinsic enjoyment, self-motivation, and accompaniment for daily activities (personal interviews, March 30, 2003). Among the most prevalent reasons that people choose to listen to music are for entertainment, to create a mood, and for ceremonial purposes (O'Brien, 1987). Over two hundred students ranked listening to music first among sixty-two physical, social, and recreational activities enjoyed during leisure time (Fitzgerald, Joseph, Hayes, & O'Reagan, 1995). Even though many students do not actively perform music, most students regularly listen to and purchase music (Boal-Palheiros & Hargreaves, 2001). Furthermore, as evidence of their interest in listening to music, consumers spend approximately $40 billion annually on the purchase of recorded music and listening equipment worldwide according to 2001-2002 data reported by the Recording Industry Association of America. The variety of reasons for listening to music as well as the
amount of time and money spent listening supports the idea that people value listening to music.

During the second half of the twentieth century, listening to music has been shown to have increasing importance in the lives of adults and children (Boal-Palheiros & Hargreaves, 2001). Multimedia and digital technologies have changed the nature of listeners' musical experiences and expanded the range of listening possibilities. Since music has become more accessible to listeners, more often, and in more places, musical experiences have become more individualized (Frith, 1996), as reflected in listeners' personal choices of music. Listeners can choose from many musical styles and genres, spanning the gamut from classical and romantic pieces to rock and rap music. Even within a given genre of music, listeners can select a recording from the multitude of recordings available.

While listening to music, the listener is constantly making decisions, consciously or unconsciously, about what is being heard. These decisions include personal likes and dislikes, as well as preferences for a particular musical style and performance medium. Listeners also make decisions about how to direct their focus of attention during listening, a central issue in developing listening skills (Prince, 1972). For example, listeners have reported attending to the lyrics, the melody, the rhythm, and the bass line in their favorite music (personal interviews, March 30, 2003). Consciously choosing to listen to music involves a considerable number of thought processes and decisions. Understanding the human thought process during music listening can provide invaluable insights into the process of musical thinking. The anthropologist Levi-Strauss asserted,
"if we can explain music, we may find the key for all human thought" (cited in Gardner, 1983, p. 123).

Listening to music may involve thinking about musical style, patterns, and meaning. Serafine (1983, 1986) suggested that listening involves thinking about music in active, cognitive processes, in which listeners develop their own understandings of music. She proposed that specific cognitive processes are generic (independent of musical style) and have a direct correlation to patterns or organization in the music. Serafine suggested that notes are not elements of music but material, which the composer uses to produce sounds recognized by the listener and constructed as music. In her research, she examined cognitive operations in temporal and non-temporal processes. She found that children of different developmental levels as well as adults process music in different ways. Her work has raised important questions about the developmental and constructivist nature of music listening and students' musical understanding.

Listening is of fundamental importance in understanding how music is experienced. Bamberger (1972, 1982) suggested that understanding music and learning music are both acts of problem-solving through listening. Bamberger (1991) also proposed that elementary-aged students organize sound as it occurs. Listening, then, is a process during which listeners make meaning from sounds and develop new ways of hearing the same music (Bamberger, 1994). Bamberger's work in music cognition included repeated listenings to music that resulted in conceptually reorganizing the listener's perception and accommodating new understandings of the same music. Metacognitive processes during listening, or "reflection-in-action" (Bamberger, 1991),
involved alternatively reflecting from an experience and reflecting on an experience. Bamberger’s work includes the exploration of musical self-knowledge and intuitions, beginning from the premise that listeners’ knowledge of music is based on lifelong experiences with music. In *Developing Musical Intuitions* (2000), Bamberger asserted that music is what we make of it, because each listener creates his or her own musical culture through imagination and experience.

Despite advances in music listening and music cognition, the act of listening to music has often taken a secondary role in music education. Music educators have often focused on performance preparation and instrumental skills through drill and practice instead of developing listening skills. Music listening seldom plays an integral role in daily music education because of the lack of training and resources, pressures to prepare for performances, and inadequate means of assessment (Bundra, 1993). Haack wrote, “music listening is among the last and least studied aspects of music” (1992, p. 451). Learning to play instruments, to read and write notation, and to perform in ensembles often occupies the majority of music instructional time; however, some scholars believe that instrumental performance skills and repeated practice “not only greatly impede the growth of musical sensitivity, they [also] distort and obscure the goals of musical development” (Gaston, 1963, p. 64). Madison (1966) also noted that reliable evidence of music listening skills is difficult to obtain, and that listening is consequently often overlooked or neglected as an instructional objective.

Yet listening skills are an essential part of all other musical skills, because the primary purpose of music is to be heard and shared (Haack, 1992). Baldwin (1936) and
Reimer (1989, 2003) also support the importance of listening to music, as it allows for music appreciation and musical experience without the concerns and limitations of performance. The ability to listen to music intelligently can be taught, especially using structured pedagogical approaches (Haack, 1969). At the end of the twentieth century, the general music movement began to focus more attention on the learning and teaching of listening skills (Haack, 1992); music educators made considerable progress by including analytical and perceptive listening activities and lessons in music series textbooks and curriculum guides (Haack, 1990). If the central challenge and contribution of general music curricula is to provide musical experiences that are "intensely involved, perceptive, feelingful, creative, richly significant, and satisfying" (Reimer, 1970, p. 120), then music listening is an important educational goal that deserves attention in the classroom.

Theoretical Basis

Listeners have unprecedented access to a wealth of music and information via the internet and other digital media. As a result, discriminating consumers need to select from an increasing amount of music and information according to their personal preferences. In response to the volume of recorded music and information, listening to music has become a passive activity (O'Brien, 1987), and "children are learning not to listen" [italics in original] (Sims, 1990, p. 38). Similarly, Meyers (1986) asserted that students' abilities to understand and process information have not kept pace with the amount of resources available in his text on teaching critical thinking skills. As ever-advancing technology is likely to provide even greater amounts of information in the
coming years, our educational focus needs to shift from content to cognition. To reflect technological changes, teachers should impart thinking skills instead of mere information (Knowles, 1980); in other words, “in an age where textbooks are often outdated before they are off the press . . . the goals and aims of education inevitably must change” (Meyers, 1986, pp. 1-2). Whitehead suggested that the real goal of education is the development of thought processes instead of the accumulation of information (1929/1967). While human beings are naturally predisposed to create meaning and construct concepts (Hunt, cited in Meyers, 1986), Meyers wrote, “the specific ways in which we make sense of the world are learned” (1986, p. 11).

Along with increased access to music and information, social and technological changes have demanded a higher quality of thought at the turn of the twenty-first century (Paul, 1993). Critical thinking, then, is “the essential foundation for adaptation to the everyday personal, social, and professional demands of the twenty-first century” (Paul, 1993, p. xi). To elevate intellectual standards and to effect a qualitative change in thinking, critical thinking advocates such as Paul have encouraged students to think for themselves by guiding students’ reflection on their own experiences, by developing listening as a critical thinking skill, and by asking probing questions. Learning to listen to music, however, has not been explored by music educators using such a pedagogy.

The instruction of music listening skills has traditionally taken a diagnostic and prescriptive approach including visual guides and knowledge-level questions often related to music theory. For example, in *Music for Young Americans* (1966), Berg recommended teaching program music in terms of composers’ feelings suggested by their
use of melody, rhythm, form, and other musical elements; authors such as Berg gave few opportunities for students to express their own thoughts or feelings in response to music listening. In the late 1960's and early 1970's, instruction in music listening as a part of general music courses received increased attention (Haack, 1992). Textbook authors approached music listening as music appreciation, including the acquisition of musical vocabulary and an understanding of music in historical contexts.

A contrasting approach to music listening instruction, based on verbal descriptions, emphasized the listener’s personal response to music listening (Bamberger, 2000; Bamberger & Brofsky, 1975). By highlighting the importance of listening experiences apart from theoretical and historical trappings, Bamberger and Brofsky (1975) stimulated the listener’s powers of critical observation and independent judgment. In active listening, as advocated by Bamberger and Brofsky, the listener’s perspective of the music is “personally involved, questioning, and critical” (p. xix). In other words, Bamberger and Brofsky prescribed no fixed way of listening but encouraged the listener to discover personally-relevant meaning in the music. Instead of relying on terminology and music theory to inform the listener, Bamberger (2000) also advocated addressing musical thinking through inquiry and analysis. Such a learner-centered approach to music listening and music education lends itself to critical thinking and higher order thinking skills. Higher order thinking, including analysis, synthesis, and evaluation (Bloom, 1956), provides a theoretical basis for critical thought (Olson, 2000) and can be applied to music listening activities in the classroom.
Critical thinking is both a major goal in education (D'Angelo, 1971) as well as a universal term in educational theory and practice (Richardson, 1998). The process of critical thinking begins with comprehending information that has been presented. Critical thinking includes thinking for one's self, using inductive and deductive reasoning skills (Bloom, 1956; Ennis, 1962; Sternberg, 1985) and is "reasonable reflective thinking that is focused on deciding what to believe or do [with newly acquired information]" (Ennis, 1987, p. 10). Instruction in critical thinking, as defined in this study, assists students in learning new material and encourages students to think for themselves.

Great thinkers including Plato, Aristotle, and Descartes advocated an approach to education based on reason and inquiry using reflective, "Socratic" questions based on the student's reasoning and thinking abilities. Scholars and educators such as Froebel, Kant, and Dewey developed approaches to education with applications to teaching many of the traditional academic subject areas in the eighteenth and nineteenth centuries. By using reflective questions, scholars developed students' minds through logical reasoning. The development of inductive and deductive reasoning skills gave rise to the modern definition of critical thinking (Black, 1952).

In education, critical thinking and its instruction have taken many forms. These include both generalizable and context-specific approaches that embrace self-constructed meaning and discovery (Kim, 1993; Kurfiss, 1988; Meyers, 1986). Using the term "reflective thinking," Dewey (1933) first described the active and persistent consideration of belief or knowledge. His writings served to provide the basis for subsequent authors who defined critical thinking in a variety of ways. Paul (1993) articulated five dimensions
of critical thinking (i.e. elements of reasoning, intellectual abilities, modes of reasoning, traits of mind, and intellectual standards), while Seigel (1988) suggested that critical thinking requires understanding the role of reason in actions and beliefs. Brookfield (1987) characterized critical thinking as questioning assumptions underlying habitual ways of thinking while Meyers (1986) suggested critical thinking is the ability to generalize and invent new possibilities. Two broad components of critical thinking emerge from an analysis of the various critical thinking definitions: the abilities necessary to think critically, and the attitudes and habits that characterize intellectual independence (Younker, 2002).

Critical listening, a skill involved in critical thinking, is an active process (Paul, 1993) which could positively effect students' music listening skills. The processes of comparing, evaluating, reflecting, judging, and classifying have been reported as evidence of critical thinking by Bundra (1993) and Richardson (1998) in musical contexts. While often applied in other disciplines, critical thinking processes may also be utilized in musical contexts for a variety of activities including listening. Music listening, therefore, may be one form of learning particularly well suited to constructed meanings and reflection through critical thinking.

The issue of generalizability is a central theme in the critical thinking literature (Younker, 2002). Ennis (1987) offered a definition of critical thinking generalizable to multiple subject areas. He wrote that critical thinking is "reasonable reflective thinking that is focused on deciding what to believe or do" (p. 10). What may be considered sound reasoning in one field, however, may not be valid in another (McPeck, 1981, 1990).
McPeck instead suggested that critical thinking implies specific content knowledge and is the appropriate use of "reflective skepticism" (1981, p. 7). Similarly, Siegel (1997) suggested that there are two types of thinking abilities: subject-neutral and subject-specific; both types include elements of logic and reason applicable to different subjects, as well as judgments and evaluations dependent on specific content knowledge. While subject-neutral principles employ a logical approach to verify the correctness of an answer, subject-specific principles use a psychological approach to investigate the process of determining an answer (McDaniel & Lawrence, 1990).

In music, Woodford (1995) suggested that critical thinking encompasses elements of both generalizable and subject-specific approaches. Other researchers have regarded critical thought processes involved in musical contexts as higher-order thinking skills. Artistic disciplines are particularly well suited to promote higher-order thinking skills (Paul, 1985). Because thoughts are not emotion-free nor are emotions thoughtless (Dressel, 1988), both affect and cognition play a part in higher-order thinking, especially in the arts.

The idea of critical thinking instruction in music education was supported in *Dimensions of Musical Thinking* (Boardman, 1989). This volume was published in response to *Dimensions of Thinking: A Framework of Curriculum and Instruction* (Marzano et al., 1988), which addressed the concern that high school graduates were not sufficiently prepared to use higher-order thinking skills independently. In Marzano's text, the authors identified one goal of education as the development of competent thinkers who can learn and make use of knowledge independently. Because musical independence
is a central goal of music education (Boardman, 1989; Wiggins, 2001), and critical thinking is essential ingredient for an education supporting intellectual autonomy and self-determination (Paul, 1985), critical thinking instruction in music listening is a potential avenue for developing competent and independent musical thinkers.

Need

Although the content and activities of general music programs were clearly outlined by the late 1970's, school music programs were no more effective than their predecessors of ten or twenty years before in realizing the main goal of music educators: "to help students become independent musicians" (Boardman, 1989, p. 2). In other words, "unless we help students develop appropriate thinking processes--that is, learn how to think about music . . . the time spent in the music classroom has been essentially wasted" (Boardman, 1989, p. 2). At the Ann Arbor Symposia (1978-1980), music researchers and educators sought input from educational psychologists and other experts to broaden their approach to music curricula in the public schools. In the past twenty years, general music educators have begun to expand their focus beyond musical terms and general knowledge to include musical thinking and problem solving.

Despite the interest in developing music-listening skills through problem solving and higher-order thinking, instruction based on music listening remains largely didactic and teacher-directed (Boal-Palheiros & Hargreaves, 2001). Didactic instruction in music listening is illustrated by traditional curricula, which are based on lecturing about musical components such as composers, styles, periods, and forms of music (Rives, 1970). In a
sample of British children, Boal-Palheiros and Hargreaves (2001) found that because of the way music was taught, it was among the most unpopular secondary subjects in school. Students were most often asked to identify musical elements and instruments instead of expressing how they felt or describing images associated with their listening experience. Boal-Palheiros and Hargreaves wrote, “Enjoyment and emotion are neglected in school music listening, yet they are among the most important functions of music for children, and therefore deserve more attention at school” (2001, p. 116). Although music listening ranked first among sixty-two activities enjoyed during leisure time (Fitzgerald, Joseph, Hayes, & O’Reagan, 1995), music instruction during school has been distinctly unpopular (Boal-Palheiros & Hargreaves, 2001).

The importance of creating and expressing meaning during musical activities is a central part of shared musical experiences. As a tool of emotional interpretations, communication, and healing, music has been an important part of every culture’s existence. For healthy social functioning, people need to respond to musical experiences by finding emotional meanings (VanderArk & Ely, 1991). Music is central to communication, emotion, and health of people, and some authors suggest, “the primary goals for general music classes are based on the functions of music as it exists . . . in society” (VanderArk & Ely, 1991, p. 24). Sims and Kuhn (1993) found a substantial degree of agreement in the way elementary students interpreted emotion while listening to music. They encouraged music educators to relate affective descriptions of music to formal musical elements and concepts. In music instruction, however, behavioral studies,
musical aptitude, and aesthetics have received more attention than personal responses to music.

There is a need for applied research regarding critical thinking and music listening behaviors (Haack, 1992). In the *Handbook of Research on Music Teaching and Learning* (1992), Haack wrote, “little is known about the development of skills that foster truly imaginative, thoughtful, and feelingful listening” (p. 462). Continuing research supporting this trend in general music activities should include intellectual and emotional responses to increase meaningful music listening (Madsen, 2000). Future curricula will differ from the traditional curriculum by emphasizing problem solving and higher-order thinking skills in learning tasks (Lehman, 2000). Many questions about curriculum development using critical thinking in musical contexts remain unanswered (Younker, 2002).

An approach to music listening instruction based on critical thinking may accommodate student-generated understandings of music and meaningful responses to music while at the same time developing musical concepts. In the current study, Critical Thinking Instruction (CTI) encompassed both cognitive and affective components. *Cognitive* critical thinking components included learning, comprehension, inductive reasoning, and deductive reasoning (Sternberg, 1985). *Affective* critical thinking components included making value judgments about music, and being open-minded to differing interpretations (Ennis, 1962).

Little exploratory work has been done to determine the feasibility and effectiveness of critical thinking as a pedagogical approach to music listening instruction.
While it seems logical to adopt such an approach, how such an approach will affect students' musical understandings remains unknown. It may be that reflective pedagogical materials are effective in focusing student learning on the essential elements of music resulting in enhanced learning and perception. In the current study, Critical Thinking Instruction (CTI) may lead to enhanced music listening skills and improved musical thinking by encouraging constructivist thinking in response to music listening. Instead of asking educators to accept a music listening curriculum without evidence, the efficacy of a critical thinking approach to music listening instruction needs to be investigated in order to determine its effect on students' responses to music listening examples.

Purpose

The purpose of this study was to determine the effect of instruction that included opportunities for critical thinking during music listening on the written responses to listening examples of fifth-grade students. Four research questions were constructed to determine:

1. if music aptitude, as measured by the *Musical Aptitude Profile* (Gordon, 1967/1995), has a significant effect on subjects' musical term, affective, associative, and total response scores;

2. if there are significant between group differences in subjects’ musical term, affective, associative, and total response scores by instructional treatment;

3. if there are significant within group differences in subjects’ musical term, affective, associative, and total response scores by test;
Research Questions

Specifically, the following research questions were addressed in the current study:

• RQ1: Does music aptitude as measured by the *Musical Aptitude Profile* (Gordon, 1967/1995) have a significant ($p < 0.05$) main effect on subjects’ musical term, affective, associative, or total verbal response scores when analyzed as a covariate?

• RQ 2: Are there significant ($p < 0.05$) main effect (between group) differences by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects’: (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores?

• RQ 3: Are there significant ($p < 0.05$) main effect (within group) differences by test (pretest and posttest) on subjects’: (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores?

• RQ 4: Are there significant ($p < 0.05$) interaction effect differences by test (pretest and posttest) by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects’: (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores?
Null Hypotheses

For statistical and research purposes, the following null hypotheses were assumed to be inherent in the research questions stated above:

- \( \text{Ho 1:} \) In analyses of covariance, there are no significant \((p < 0.05)\) main effect differences on subjects' (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores with subjects' scores on the *Musical Aptitude Profile* (Gordon, 1967/1995).

- \( \text{Ho 2:} \) There are no significant \((p < 0.05)\) main effect (between group) differences by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects': (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.

- \( \text{Ho 3:} \) There are no significant \((p \leq 0.05)\) main effect (within group) differences by test (pretest and posttest) on subjects': (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.

- \( \text{Ho 4:} \) There are no significant \((p < 0.05)\) interaction effect differences by test (pretest and posttest) by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects': (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.
Definitions

For the purposes of the current study, critical thinking in music was defined as musical understanding through reflection and participation in a constructivist model of education. The skills subjects demonstrated as a means of developing their musical understanding included: analyzing, synthesizing, comparing and contrasting, developing criteria for judgment, sequencing, making connections, recognizing patterns, and evaluating musical information through active listening, reasoning, and reflection based upon affective responses and prior musical experiences.

Critical Thinking Instruction (CTI) constituted the first treatment for the present study and was comprised of four elements: instruction in musical terms and concepts, repeated listening to musical examples, activities in response to the listening examples, and opportunities for critical thinking about the listening examples. CTI consisted of a series of lesson plans designed by the researcher in collaboration with published experts in critical thinking and music curriculum design. The experts' role in developing CTI lesson plans and associated contributions to the current study are more fully described in Chapter 3. During and after repeated listening to examples of instrumental music, the students responded by creating movement patterns, creating original musical maps, improvising using body percussion and classroom instruments, leading classroom activities, and answering the teacher's higher-order cognitive questions. The CTI lessons were designed to have the students experience, reflect, and share their thoughts about the music as they investigated sound patterns, images, and emotions in the musical examples.
Activity-Based Instruction (ABI) constituted the second treatment for the present study and was comprised of three elements: instruction in musical terms and concepts, repeated listening to musical examples, and rote activities in response to the listening examples. ABI lessons in the current study used identical musical material, contained time spent on instruction, provided the same listening experiences, and consisted of the same types of responding activities contained in CTI lessons (i.e. movement, using musical maps, and playing classroom instruments). The ABI lessons, however, contained no opportunities for critical thinking in the form of higher-order cognitive questions, improvisation, creative movement, creating musical maps, or leading other students in classroom activities. The higher-order cognitive questions and additional opportunities for critical thinking were the two key components distinguishing the two instructional treatments; these components were present in the CTI treatment and absent from the ABI treatment.

In the current study, there were four dependent measures derived from the researcher-designed instrument "Listening and Thinking." Using a word count methodology, three independent judges analyzed and scored subjects' written responses to determine the musical term, affective, and associative response scores; the total response score was the combination of the musical term, affective, and associative response scores.
**Assumptions**

One assumption of the current study was that constructivist activities such as improvisation and creative movement in addition to higher-order cognitive questions created a learning environment in which critical thinking in music occurred. It was also assumed that the subjects’ verbal responses on the “Listening and Thinking” measure were an accurate and appropriate reflection of their music listening skills. Subjects’ verbal responses were assumed to demonstrate critical thinking related to the music listening examples. Additionally, the frequency of musical, affective, and associative terms in subjects’ verbal responses was assumed to demonstrate a commensurate level of critical thinking.

**Limitations**

The scope of the current study was limited to the effect of critical thinking instruction on subjects’ written responses to music listening examples. Because critical thinking does not necessarily produce correct answers (Paul, 1985) or success (McPeck, 1981), the musical accuracy of the subjects’ responses was not included in the focus of the current study.

Gender-based differences were also not considered in the current study. To allow for possible gender effects, a balanced sample of males and females was used; details of the sample participating in the current study are provided in Chapter 3. Prior musical experience the subjects may have had was also not considered in the current study. Instead, differences between subjects’ pretest and posttest response scores were analyzed
using the *Musical Aptitude Profile* (Gordon, 1967/1995) as a covariate to address any variance in the subjects' musical aptitude that may have influenced the statistical outcomes.
CHAPTER TWO: REVIEW OF LITERATURE

The sources used in this review of literature include published articles, dissertations, textbooks, and empirical studies, as well as chapters from the *Handbook of Research on Music Teaching and Learning* (Colwell, 1992) and *The New Handbook of Research on Music Teaching and Learning* (Colwell & Richardson, 2002). This review of literature related to critical thinking and music listening instruction is organized in four areas: music listening and music listening instruction; theoretical perspectives and applied studies on critical thinking in musical contexts; questioning strategies as thinking instruction; and verbal data as evidence of thinking processes.

Music Listening and Music Listening Instruction

Because music listening plays an integral role in all other musical activities, the literature on music listening is extensive. Haack (1980, 1992) and Hedden (1981, 1990) have reviewed the literature on music listening, summarized findings of previous studies, and made recommendations for music listening instruction. LeBlanc (1980), Reimer (1970), Bundra (1993), and Richardson (1988, 1998) have described the nature of the listening experience with implications for music listening instruction, while other authors (Andrews, 1962; Flowers, 1984, 2000; Haack, 1969; Herberger, 1983; Rives, 1970) have explored the effect of music listening instruction and made recommendations for music listening pedagogy. Music listening and music listening instruction are important issues in the current study; current thinking on music listening and its instruction serve as the
foundation for both the Critical Thinking and Activity-Based Instructional treatments designed for and used in the current study.

Music Listening

In "The Behavior of Listeners" (1980) and "The Acquisition of Music Listening Skills" (1992), Haack reviewed over two hundred studies on music listening and formulated a number of conclusions about this body of research. Haack (1980) summarized music listening research in four major areas: physiological (including verbal), psychological, sociological, and developmental-educational. The majority of music listening research has been descriptive or experimental, usually taking a quantitative, positive approach. Summarizing his findings, Haack (1992) highlighted "the importance of verbal imagery and the value of verbal skills in teaching and learning about music listening" (p. 461). Particularly important to the current study is Haack's finding that there is an increased interest among researchers in verbal aspects of teaching music listening skills, as well as the expectation that verbal responses to music are valuable resources for future research. Pertinent to the current study is Haack's recommendation that future studies strengthen cooperation between researchers and educators to result in more practical applications of empirical findings.

Haack concluded that several findings were common to both his 1980 and 1992 reviews of literature. Specifically relevant to the current study is the observation that, "there remains a timely need for applied research into the three C's of cognitive style, creativity, and critical thinking vis-à-vis music-listening behaviors" (1992, p. 462). Considering the existing literature on music listening research, there is an opportunity to
investigate instructional methods that impart "truly imaginative, thoughtful, and feelingful listening" (p. 462). Haack's findings are consistent with other researchers' findings on music listening pedagogy and recommendations for classroom applications, including those offered by Hedden and Reimer.

Hedden (1981) reviewed music listening research which involved elementary and junior high school subjects. Specific recommendations for music listening instruction based on research findings were included in his findings. Hedden found that repeated listening experiences positively influenced students' affective responses, and he recommended including specific musical elements in music listening examples used for classroom instruction (e.g. lively tempi, varied dynamics, driving rhythms, and repeated conjunct, diatonic melodies). Additionally, Hedden found that, beginning at the fourth-grade level, students prefer rock music to other musical genres. By including selections of popular music, energetic tempi in a majority of examples, a range of dynamics, diatonic melodies, and melodic repetition, the music chosen for the current study reflects the findings summarized by Hedden.

Also important to the current study are Hedden's (1990) recommendations for instructional practices in teaching music listening skills. For effective music listening instruction, Hedden recommended selecting pieces of actual music (instead of contrived examples) with moderately fast or fast tempos, melodic in character, and with a strong sense of the "beat." Hedden also advocated using instrumental music, instead of vocal music, and suggested the use of popular music to promote student interest in music listening. In summary, Hedden found that students could be aided through instruction to
become more perceptive listeners. He wrote, "Instructors who purposefully and systematically strive to develop students' listening skills will be successful at the task" (p. 37). Hedden’s findings regarding student interest in listening to music have informed the selection of music as well as the design of the current study.

Along with Hedden’s practical suggestions for music listening instruction, Reimer’s (1970) theoretical view of music listening as an active process is also important to the current study. Reimer described the act of listening as an active process during which listeners explore and analyze the music for themselves. According to Reimer, perceiving or listening intensely influences listeners, and they are as affected by the expressive qualities of the music as much as the composer. In other words:

the experience of the work is both a sharing and a discovering. In this sense, it is also a creative experience for the perceiver, in that the new experiences of feeling are made possible as he grasps more and more of the work’s expressive subtleties [italics in original](p. 67).

Reimer also indicated that using verbal descriptions and conceptual explanations could enhance a listener’s experience and understanding of music. He wrote, “descriptive use of language, or concepts, is an essential tool for heightening awareness about the way music works” (p. 109). Reimer’s suggestion is important to the current study because it supports the value of sharing insights during classroom discussions. His comments also provide support for the use of verbal descriptions about music and musical concepts taught in CTI and ABI lesson plans.

By proposing an analytical view of the factors influencing the listening experience, LeBlanc (1980) suggested that the way listeners process music has an
important impact on the overall listening experience. LeBlanc proposed an eight-level hierarchy of factors influencing the listening experience. LeBlanc placed the listener's mental processes on the third level from the top, above musical training, auditory sensitivity, basic attention, and numerous other factors. At this level of the hierarchy, he suggested that listeners formulate and tests hypotheses, imagine extramusical associations, and prepare to make judgments about the music being heard. The effect of enhancing listeners' thought processes may positively influence their listening experience more directly than many other factors. LeBlanc's hierarchy, therefore, supports the potential impact and influence that CTI has on music listening.

In a developmental study, Bundra (1993) also investigated factors relating to students' music listening experiences by studying verbal responses to music listening examples. Bundra used verbal protocol analysis (thinking out-loud) to collect descriptive data on differences in children's reflections on music listening by age, gender, and musical background. She found that children were able to describe their own thoughts while listening to music, to make and express judgments about the music, and to articulate their ideas about the listening process. This finding is particularly relevant to the current study; it articulates key features of subjects' participation in CTI lessons.

Bundra's findings are consistent with those made by Richardson (1988) who also studied children's mental processes during music listening. Richardson found that during music listening experiences, children engaged in prediction, comparison, evaluation, reflection, and recognition of musical material. She suggested that four distinct, nonlinear processes contribute to making musical judgments during music listening, i.e.
"expectation, comparison, prediction, and evaluation" (p.134). Using a paradigm of four roles to describe the ways expert musicians think reflectively in a musical experience (i.e. performer, conductor, arranger, and listener/critic), Richardson based her definition of musical thinking on Dewey's idea of reflective thinking. In reflective thinking, Dewey (1933) identified a fund of experiences, which provides a basis of prior academic knowledge, practical experience, affective reactions, and imagination. Accordingly, Richardson termed her verbal protocol analysis methodology as a "philosophical, speculative approach" (p. 28). In a later study, Richardson (1998) found common thinking skills among participants from three different populations while listening to music. She found that classifying, elaborating, comparing, predicting, and evaluating were among the cognitive skills associated with music listening. Richardson advocated using questioning strategies to encourage students to label, identify, describe, and articulate their thinking while listening to music. Richardson's investigation is relevant to the current study with respect to the specific questioning strategies and mental processes explored in her study. Her study lends support to the validity of CTI lessons in the current study.

The researchers discussed in this section provided important background information about the nature of the listening experience. As Haack noted, research on thought processes associated with music listening is a promising area of investigation. According to Hedden and LeBlanc, music listening skills are subject to improvement, especially when instruction includes repeated listening to music shown to be consistent with students' musical preferences. Bundra found that children were able to articulate
their own thoughts about music listening and the listening process. Richardson found common thinking skills associated with music listening among listeners from three different populations. These findings serve as a foundation to support music listening instruction and the development of related thinking skills. In the next section, experimental research on music listening instruction will be discussed in relation to the current study.

Music Listening Instruction

Music listening is an important component of general music instruction (Baldridge, 1984). In his study of music listening activities, however, Baldridge reported that most music teachers assumed their students were listening as opposed to assigning specific listening objectives. Similarly, Reimer, Hoffman, and McNeil (1982) emphasized the need for effective music listening instruction. Addressing students in the Silver Burdett text *Music*, they wrote, “sometimes, when you listen, the music fills your thoughts and your feelings. That’s the way composers and performers hope you will listen to their music, *musically*. But sometimes listening is *nonmusical*” [italics in original] (p. 108). Tait and Haack (1984) highlighted the importance of instruction and its effect on enhancing students’ music listening experiences. Tait and Haack described sharing feelings and thoughts through the medium of music. Nye (1979) and Madsen and Kuhn (1978), however, reported that music listening instruction often emphasized the elements of music instead of student responses to music. Attention to specific teaching skills and their effect on students’ listening behaviors is particularly important to the current study in which critical thinking instruction is contrasted with activity-based
instruction during music listening experiences. Other researchers (Andrews, 1962; Flowers, 1984, 2000; Haack, 1969; Herberger, 1983; Rives, 1970) reporting experimental findings on music listening have investigated contrasting methods of instruction; a discussion of their findings and relevance to the current study follows in this section.

Herberger (1983) investigated the effect of instruction on students’ responses to music listening. In this study, the subjects’ written responses were analyzed before and after an instructional period of three weeks. The music instruction consisted of historical, biographical, and structural information about the musical examples as well as an analysis of Beethoven’s *Egmont Overture*, opus 84. Distinguishing Herberger’s study is a methodology allowing him to investigate listeners’ responses while they listened to a piece of music. The subjects, a group of thirteen-year-old students, responded by writing down “their observations, their subjective impression, their evaluations or anything else they became aware of” (p. 41) while they listened to the music. At specific intervals, Herberger gave one of two types of visual signals: an obligatory signal requiring the subjects to respond, and an optional signal requesting the subjects to respond. Herberger inferred the subjects’ mental and emotional processes from their written responses.

Herberger used a pretest posttest design for this study to ascertain the effect of the intervening instruction on the subjects’ responses. While the responses prior to the music instruction focused on volume, instrumentation, time, expression, and pitch, the responses following the instruction expanded to include formal structures, themes, and “the imaginative content of the work” (p. 45). He observed that about half the students used the facts provided during instruction in their responses following the instruction; he
found the written responses to support the effect of the musical instruction. Herberger concluded that the didactic analysis and factual musical instruction "contributed to a more conscious musical experience" (p. 45). Similarities in data collection and music listening experiences between Herberger's investigation and the current study support the methodology of collecting and evaluating students' written responses to music listening examples before and after an instructional period.

Andrews (1962) compared the effect of two contrasting methods of listening instruction on fifth-grade students' music achievement and attitudes toward music. In the development of her experimental instructional method, Andrews noted a trend toward experiential education and increasing importance of attitudes related to music appreciation and the development of values. Accordingly, the control group instruction focused on didactic teaching and factual information while the experimental group focused on self-initiated listening activities including optional writing, drawing, and illustrating activities. Andrews based the achievement measure on the Minnesota State Music Curriculum and the attitude measure on a questionnaire consisting of items in four categories (i.e. the practical value of music, spiritual value of music, interest in and pleasure from music, and respect for the opinions of others). A three-part Likert scale and several reversed items were used in the questionnaire. While there was no significant difference found by instructional method on the students' musical achievement, the attitudes displayed by the students in the experimental treatment were significantly more positive (critical ratio = 0.42). Andrews suggested that appreciating music is a product of education, and, in particular, a natural consequence of experiential education. She also
commented that attention-developing musical values, "must be coupled with the urgent need to help children become more discriminating and competent as music listeners" (p. 62). Andrews's study serves as an important parallel to the current study because the control instruction relied on didactic lower-level cognitive instruction while the experimental group participated in a variety of self-initiated activities. Similarly, Andrews's support for developing discriminating music listening skills concurs with the rationale for the current study.

Rives (1970) also investigated the effect of two forms of music listening instruction on the achievement of fifth-grade subjects. The objectives of both approaches were: to familiarizing students with a selected repertoire of piano music, to develop musical memory, to develop analytical skill through musical comparisons, and to develop the ability to perceive musical structure. Both instructional methods consisted of thirty-four lessons lasting fifteen minutes each. The traditional approach consisted of biographical information about the composer, listening to musical themes, a lecture on the musical structure, and listening to three performances of the music. In the traditional approach, the subjects did not give any formal responses. In contrast, the programmed approach consisted of five different following a musical stimulus:

(a) is A the same or different from B? (b) which one of A, B, or C, is different from the other two? (c) does this musical fragment contain a wrong note? (d) is A, B, or C the best ending to this phrase? (e) is this musical fragment a sequence? (p. 127).

Subjects in the programmed approach indicated their responses on a written form; reinforcement of the correct responses was provided by the researcher. Rives controlled
for differences in subjects' musical aptitude, scholastic aptitude, prior musical experiences, gender, and race. A four-part listening achievement test to measure the four stated instructional objectives was given as a posttest. Rives found no significant difference in listening achievement by instructional approach among the fifth-grade subjects. Instead of adopting either approach as originally designed, Rives advocated combining selected elements of each approach; he suggested designing listening instruction to include active participation as well as discussion to enhance student motivation during instruction. As in Rives's study, statistical controls for variations in subjects' musical aptitude were included in the current study while comparing the effect of two different instructional methods on students' written responses to music listening.

Also parallel to the current study is Haack's (1969) comparison of a deductive versus an inductive approach to music listening instruction on seventy subjects at the high-school level. In Haack's study, method A, the deductive approach, emphasized analysis, teacher direction, and active student participation in exploring the complex musical relationships in the musical examples. Method B, the inductive approach, consisted of brief discussions of a musical concept and an assignment, e.g. "Vary this theme in three different ways, yet keep it recognizable" (p. 194). The subjects received either the deductive (teacher-directed) or the inductive (assignment-based) method of instruction for ten fifty-minute sessions during a two-week summer program. The subjects completed an objective criterion-referenced test, "Test for the Perception of Thematic Relationships," as a pretest and a posttest. This measure, written and pilot-
tested by Haack, was used to determine the subjects’ gain scores. In the dependent measure:

the student was presented with musical stimuli taped into the form of problem situations. His task involved perceiving a thematic relationship, or lack thereof, between a pair of musical excerpts . . . the student was also called upon to identify by means of code letters the type or types (limited to three basic concepts) of development or alteration perceived (p. 196).

Haack found that both methods of listening instruction resulted in statistically significant gain scores ($p \leq 0.001$). Although the deductive method was associated with slightly higher gain scores, this difference was not statistically significant. Haack also found a statistically significant difference in subjects’ gain scores by years of experience in performance classes; the subjects with more than four years of experience in performance classes scored significantly lower than the subjects with four years or less experience in performance classes ($p \leq 0.05$). Music instruction that emphasized performance and executive skills was not associated with greater listening skills. As Haack wrote:

great amounts of drill of parts and isolated technical problems without consciously relating parts to the whole, without pointing out the musical relationships, intricacies, and subtleties which make the music more sensible and worthwhile, may eventually bring about an intellectual inhibition to the perception of such poetic aspects of music (p. 200).

Haack concluded that performance classes were not necessarily associated with listening skills or intelligent listening to music. He advocated “more effectively structured approaches” (p. 201) to music listening instead of undirected lengthy performance participation. Although working with older subjects, Haack provided relevant insights to
the current investigation of music listening skills and concept development. Instead of performance skills and drill activities, an approach based on conceptual development and listening skills, was offered in CTI lessons. This approach to music listening was compared to teacher-directed ABI lessons as described in chapter three of this document.

In another experimental study, Flowers (1984) investigated the effect of listening instruction on the written responses of children and adults. Flowers studied the responses of children and untrained adults to eight selections of piano music by Kabalevsky, Villa Lobos, and Khatchaturian. The author used written descriptions of music as a measure of subjects’ attention to musical elements and as a measure of the effect of music instruction. In a pretest, the subjects, third-grade, fourth-grade, and undergraduate non-music majors, described eight selections of piano music. During the listening examples, Flowers allowed the subjects maximum freedom to respond and gave no other listening instructions. The children described extramusical, timbre, and tempo characteristics of the music while the undergraduates described the extramusical, tempo, and pitch or melody of the music. The third and fourth-grade subjects then received instruction using pairs of musical terminology (i.e. piano and forte; staccato and legato; and adagio and allegro). Based on posttest data, Flowers found that instruction in vocabulary produced a significant ($p = 0.01$) increase in the children’s responses related to timbre, tempo, and melody.

While the third and fourth-grade subjects in Flowers’s 1984 study provided more references to musical terms after the instruction, they also provided fewer extramusical responses. In other words, the increase in references to musical elements was
accompanied by a decrease in attention to extramusical elements resulting in no
significant increase in the subjects’ responses overall. The instruction regarding specific
musical terms seemed to shift the subjects’ responses from an emphasis on extramusical
terms to an attention to newly learned musical vocabulary. As Flowers wrote, “choosing
a manner of responding to ‘what you hear’ represented an either-or choice for most of the
children” (p. 23). She suggested a hierarchy of verbal descriptors: extramusical, timbre,
tempo, and dynamics. She found that listeners most often use analogies or descriptors
that are not inherently musical such as “snakes and lizards” to describe violins playing
descending minor seconds. In a review of her 1984 study, Flowers (1990) asserted that
children naturally use extramusical analogies and images to describe music and therefore
suggested that such descriptors are effective ways of focusing their attention during
listening. This suggestion supports the approach employed in the current study. In both
CTI lessons and the “Listening and Thinking” measure, extramusical associations were
classified as either associative or affective descriptors of music. Both types of
extramusical responses were encouraged as the subjects described the musical examples
and participated in classroom discussions.

In contrast, Flowers (2000) reached different conclusions concerning the effect of
music listening instruction on fifth and sixth-grade subjects’ written responses to music
listening examples. The instruction, which focused on metaphor and emotion, analytic
musical elements, and temporal language, took place during four days and was
administered to one intact class at each grade level. Flowers reported that most often in
general music curricula, “students study vocabulary pertaining to music elements,
omitting discussion of emotional or temporal events” (p. 275). She therefore designed instruction to highlight descriptors of music not commonly featured in traditional listening instruction.

An experimental group of fifth-grade \( (n = 19) \) and sixth-grade \( (n = 23) \) subjects received instruction on four separate days consisting of four lessons during which they wrote responses to four different pieces of music. The instructional objectives were: to create metaphors and describe emotions; to analyze and describe musical elements; to write a story using temporal language; and to analyze and describe musical elements using temporal language. Flowers found that the subjects’ responses had a low rate of description except in the area of that day’s focus; her findings agreed with previous researchers who indicated that children focus on a single musical element to the exclusion of others. At the conclusion of the instruction, the experimental subjects wrote descriptions of six additional pieces of music. A control group of nineteen fifth-grade and twenty-three sixth-grade subjects did not receive Flowers’s music listening instruction; the control subjects provided written descriptions of the same six pieces of music for comparison. In a posttest, ten judges attempted to match the written descriptions provided by the subjects to the six pieces of music. Using a chi-square crosstabulation, Flowers found there was no statistically significant difference in the frequency of correct matches based on subjects’ written responses by grouping at either grade level. Instead, there was a significant difference \( (p = 0.001) \) in the frequency of correct matches by grade level; the respective frequencies of agreements were 45% and 53% for fifth and sixth-grade subjects, respectively. While subjects in the experimental group used more words than
subjects in the control group, this difference was not statistically significant. Flowers (2000) wrote that the purpose of her study was:

> to encourage children to listen carefully and communicate through written language features of the music that would be understandable by another person. The goal was to tell something that was identifiable in relation to the specific music excerpt... This objective required listening, thinking, and writing. (p. 273)

The design of Flowers’s study included practice in writing and a matching game; she reported, however, that students attempted to list everything they heard instead of concentrating on the most salient elements.

Flowers’s (2000) findings contradicted those of an earlier study (Flowers, 1996) in which students’ descriptions of music were more successfully matched with successive grade levels, third through fifth. In both the 1996 and 2000 studies, Flowers noted a similar rate of matching descriptors provided fifth-grade subjects, 45% and 41.5% respectively. She suggested that there is a developmental factor in writing descriptions of music evident in both studies. The current study shared several features with Flowers’s investigation, including analyzing written data, studying the effect of listening instruction, attention to affective descriptors as well as analytical music terms, and the grade level of the subjects. In both studies discussed above, Flowers provided a relevant perspective on music listening instruction and students’ written descriptors.

Perspectives on the nature of music listening and its instruction including efforts to effect a change in listeners’ responses to music listening examples were discussed in the above section. In theoretical and empirical studies, authors have explored contrasting instructional approaches to music listening. In the current study, the effect of two
contrasting approaches to music listening was also studied, i.e. a critical thinking versus an activity-based approach to music listening instruction. Built on a connection to the nature of the music listening experience, several authors have reported a mixture of successes and failures in designing effective instruction. These studies have approached the use of thinking processes during music listening. The previous studies, however, have not included an exploration of critical thinking that is a crucial component of the current study. A discussion of critical thinking follows in the next section, including an exploration of two theoretical issues key to critical thinking: generalized versus context-specific skills and the definition of critical thinking itself.

**Perspectives on Critical Thinking**

Critical thinking has been established as one of the major goals in education (D'Angelo, 1971) and is a universal educational term (Richardson, 1998). With roots extending to the early part of the twentieth century, critical thinking is an outgrowth of critical theory, a movement associated with social theorists of the Frankfurt school founded in 1923. Criticisms of the industrial society of the 1920's were framed as social commentaries; Habermas and others extended such criticisms by advocating broader understandings of social problems and new possibilities beyond the status quo. In other words, critical theory challenged "the blind acceptance of the ideology that the world of humans being human can only be described as it is, and not understood in terms of what might be or ought to be" [italics in original] (pp. 4-5, Regelski, 1998). While critical theory has far-reaching implications beyond the scope of this study, theoretical
perspectives on critical thinking informed Critical Thinking Instruction (CTI) in the current study with respect to two issues: the definition of critical thinking itself, and generalizable versus context-specific thinking skills. These two aspects of critical thinking are discussed in this section.

Definitions of Critical Thinking

One of the main challenges in critical thinking research is articulating a definition of critical thinking itself (Richardson & Whitaker, 1992). Critical thinking has been defined and described in multiple ways (Woolfolk, 1995). While there are many definitions of critical thinking, there is also a consensus among theorists about the central elements of critical thinking (Sternberg, 1985). In this section, definitions proposed by three prominent authors are discussed: Sternberg (1985, 1986), Ennis (1984, 1985), and Bloom (1956). A synopsis of elements common to these three hierarchies (Gubbins, 1985) and a list of critical thinking skills operationalized in musical settings (Beane, 1989) are also presented in this section. Finally, definitions of critical thinking including affective components (Haack, 1990; Olson, 2000; Pogonowski, 1987) are included as part of the theoretical framework of critical thinking for the current study.

Sternberg's approach to critical thinking (1985, 1986) included teaching for transfer, motivating students and teachers, and training three components of successful thinking. He proposed three kinds of thought necessary for critical thinking: metacomponents, performance components, and knowledge-acquisition components. Metacomponents such as recognizing and identifying a problem are higher order executive processes. Additional metacomponents include mentally representing the
problem, devising a problem-solving strategy, and evaluating the success of the strategy. Performance components are non-executive, lower-order processes used to carry out the metacomponents and provide feedback. Examples of performance components include making comparisons, justifying actions, and responding to stimuli. Finally, knowledge-acquisition components are used to learn concepts or procedures. Identifying relevant information, relating prior knowledge to new situations, and organizing new information are three examples of knowledge-acquisition thought.

Sternberg’s definition of critical thinking in a three-part model of mental components is relevant to the current study in that CTI lessons included all three levels of thought (i.e. metacomponents, performance components, and knowledge-acquisition components). By responding to higher-order questions, participating in improvising activities, and learning new vocabulary and concepts, students in the CTI classes engaged in metacomponents, performance components, and knowledge-acquisition components, respectively. In contrast, students in the ABI classes engaged in limited performance components and knowledge-acquisition components while responding to stimuli and learning new vocabulary and concepts, respectively.

In a more detailed model of critical thinking, Ennis (1985, 1987) contributed an understanding of dispositions and abilities necessary for critical thinking. Ennis wrote that critical thinking is “reasonable reflective thinking that is focused on deciding what to believe or do” (1985, p. 54). A philosopher, Ennis suggested that critical thinking is the result of the interactions between the disposition for critical thought and abilities necessary for critical thinking. Examples of dispositions for critical thought included:
seeking a clear statement of the problem, seeking reasons, seeking sufficient information, and seeking relevant connections to the main point.

Ennis identified the abilities necessary for critical thought in five categories: elementary clarification, basic support, inference, advanced clarification, and strategy and tactics. Within these five categories, specific abilities were identified. “Elementary clarification” included focusing on a question, analyzing arguments, and asking and answering questions of clarification; “basic support” included making judgments about sources, reports, and observations; “inference” included deducing information, judging deductions, and making and judging value judgments; “advanced clarification” included defining terms, judging definitions, and identifying assumptions; and “strategy and tactics” included choosing a course of action and interacting with others. In the current study, Ennis’s system of dispositions and abilities necessary for critical thinking provided a philosophical basis for mental processes encouraged in CTI lessons. Specific thought processes such as analysis, synthesis, and evaluation were presented in a musical context during CTI lesson plans.

In the *Taxonomy of Educational Objectives* (1956), Bloom proposed six hierarchical levels of thought: knowledge, comprehension, application, analysis, synthesis, and evaluation. Each level in the hierarchy builds upon the previous level; cognitive skills learned at one level play a part in thinking at the next successive level. At the lowest level in the taxonomy, knowledge, learners merely learn new information by rote or other direct means. Repetition, remembering, and reciting facts are examples of learning at this level. Learners at the comprehension level are required to understand
information they have learned. For example, learners could paraphrase or restate a story in their own words to demonstrate their comprehension of information. At the application level, learners use the information they understand in some way. Using rules to solve a problem or following a procedure in a new situation are examples of thought at the application level. Learners at the analysis level make critical judgments about what they have learned and applied. Identifying assumptions made in an argument or discovering hidden fallacies are examples of analysis-level thought. At the synthesis level, learners assemble knowledge they have acquired and analyzed. For example, learners could design a position for a debate or construct a scientific theory at the synthesis level. Finally, at the highest hierarchical level, evaluation, learners make critical judgments about their analysis and synthesis of new information. Learners at the evaluation level could critique a theory or position in a debate, or comment on the strength or weakness of an argument. In terms of Bloom’s taxonomy, "critical thinking is an ability to evaluate, compare, analyze, critique, and synthesize information" (Coon, 1995, p. 27). The difference in thought processes at each level is relevant to the current study. In ABI lessons, subjects were taught musical terms and concepts at the knowledge and comprehension levels. In addition to the previous processes, subjects in CTI lessons were encouraged to analyze, synthesize, and evaluate music listening examples.

Although there are differences in the three taxonomies of thought proposed by Bloom (1956), Sternberg (1985), and Ennis (1987), there are many commonalities among their respective taxonomies. Gubbins (1985) summarized the three taxonomies in a “Matrix of Thinking Skills” comprised of six cognitive areas: problem solving, decision-
making, inferences (including deductive and inductive thinking skills), divergent thinking, evaluative thinking, and philosophy and reasoning (cited in Sternberg, 1985).

Divergent, inductive, deductive, and evaluative thinking, included as examples in Gubbins’s matrix, are relevant to the current study. The pertinent cognitive skills include making decisions, analyzing open-ended problems, recognizing relationships, generating multiple ideas, generating different ideas, listing attributes, identifying components, synthesizing sequences of information, and comparing and contrasting ideas. In Gubbins’s matrix, the similarities among critical thinking descriptors embrace multiple expressions of critical thinking. For example, critical thinking includes analysis, synthesis, problem solving, and evaluation. Ultimately, critical thinking is “thinking that is purposeful, reasonable, and goal-directed” (Halpern, 1989, p. 38).

Focused thinking has been described in a musical context in terms of thinking skills by Beane (1989). Instead of different types of thinking, Beane defined critical thinking in music in terms of specific thinking skills. She wrote that critical thinkers in music should possess:

epistemic cognition (the examination of another person’s thinking processes)
classification
comparison and contrast
pattern recognition
causal relationships
making connections
identifying the main idea
sequencing
developing criteria for judgment
synthesis
metacognition

(p. 239, cited in Brophy, 2000)
Beane’s list of thinking skills contributed to the design of CTI lesson plans and is relevant to the current study. The above operationalized skills in a musical context served to identify important component skills in musical critical thinking.

In artistic media, however, critical thinking incorporates an affective component not included by the previous authors in this section. The definition of critical thinking was expanded in the current study to include attention to affective responses within the framework of critical thinking as described by Olson (2000). Several parallels between Bloom’s taxonomy are included in such a broad definition of critical thought (e.g. analysis, synthesis, evaluation). Additionally, Olson highlighted the union of affective and thinking processes into one product. The arts provide an experience that can be appreciated both subjectively and objectively by joining cognitive and emotional stimuli. In other words, “with the arts we can always count on involving our minds and senses, invoking associations, sometimes listening, performing, . . . drawing, and dancing, or simply talking about the arts, or thinking about thinking” (Olson, 2000, p. 30). Through activities similar to those listed by Olson, subjects in the current study engaged in music listening and (in the CTI group) used critical thinking questions and other opportunities for critical thinking to reflect on their responses to music listening examples. The subjects’ responses included affective involvement. For the current study, Olson’s definition of critical thinking united Bloom’s hierarchy of educational objectives with affective involvement in an artistic medium. The subjects used objective, musical
terminology along with affective and personally-based answers in response to the music listening examples on the “Listening and Thinking” measure.

Pogonowski (1987) also promoted affective responses in her view of critical thinking and music instruction. She suggested that in musical contexts, critical thinking makes use of cognitive as well as affective thought processes. She adopted the perspective that “critical thinking is the result of experiential learning that embraces the learners' affective and cognitive domains” (p. 38). While music instruction includes executive and reading skills, Pogonowski advocated the inclusion of experiences in musical expression and making meaning through music. Through exploration, experimentation, improvisation, and listening, music educators enable students to think critically in music. To design captivating and interesting instruction, Pogonowski asserted that affective elements need to be included in classroom lessons. She wrote, “It is the combination of the affective and cognitive factors of the problem-solving process that motivates our critical thinking behavior” (p. 38). In other words, musical experiences in the classroom create a reason for the musical content. Without experiential involvement, Pogonowski wrote, there is “no experience to reflect upon, and therefore, no critical thinking skills” (p. 41). In the current study, CTI lessons included experiences in music listening, classroom activities, and improvisation as advocated by Pogonowski. Additionally, the subjects’ affective and reflective responses were incorporated in the pretest, posttest and lessons plans during the current study.

Haack (1990) agreed with and strengthened Pogonowski's assertions; he also advocated the inclusion of affective responses to music in classroom instruction. With
respect to music listening instruction, Haack reported that music educators have focused on musical elements external to the listener instead of internal, affective responses. He asserted that by ignoring students' personal responses to music, music educators may be neglecting one of the most important parts of music education. Haack wrote, “we must help students to move between contemplation of an artistic object and contemplation of the personal effects of their interaction with it if we are to help them live informed, meaningful lives” (p. 29). Haack advocated designing more holistic music curricula that embrace affective responses to music. He suggested that “educating the senses, emotional development, and learning about subjective reality” [italics in original] (p. 29) could take on substantive meaning if affective responses were included and encouraged in classroom music lessons. Haack asserted that music listening in particular has promising potential for including affective responses in a balanced approach to classroom instruction. He wrote that music listening instruction may be the most appropriate instructional medium “for the development of balanced and integrated cognitive/affective, objective/subjective insights and relationships” (p. 32). In the current study, Haack’s advocacy of affective responses in music listening instruction supports the curricular design of CTI lessons as well as the personally-based responses on the “Listening and Thinking” measure. In addition to the underlying issue of defining critical thinking, the generalizable and context-specific characteristics of critical thinking is important to the current study. Perspectives on the nature of generalized versus specific critical thinking skills are discussed in the next section.
Generalizable versus Context-Specific Thinking Skills

The second of the two issues in critical thinking relevant to the current study is the way thinking skills are conceived: either broadly defined as a generalizable skills or narrowly defined as context-specific thinking. Some authors (Dewey, 1933; Ennis, 1962, 1985, 1989) proposed a generalizable view of critical thinking, while other authors (Gardner, 1981, 1983; McPeck, 1981, 1990; Norris, 1985; Paul, 1993) supported a context-specific approach to critical thinking. In this section, a discussion of the above authors and their views on generalizable versus context-specific critical thinking skills will be presented. An alternative view, however, combines generalizable thinking with context-specific thinking skills in a musical context (Woodford, 1995). Woodford’s view is most relevant to the current study and completes this discussion of critical thinking.

Dewey (1933) proposed a model of reflective thinking that represents the basis of generalized thinking skills. Instead of “critical thinking,” Dewey used the term “reflective thinking” and described it as active, considered, and careful thinking to distinguish it from four other types of thinking he termed transient, imaginative, inventive, and near-reflective. For Dewey, reflective thinking liberated thinkers from their natural thoughtless impulses and circumstances; he viewed the unreflective state as unnatural in that people had an inherent sense of curiosity and tendency for order in the world. Dewey formulated step-by-step instructions for problem solving as a model of reflective thinking. His seven-step approach consisted of:

- pre-reflection
- suggestion
- intellectualization
- hypothesis
Central to Dewey’s definition of reflective thinking is the notion of “funded experiences.” Specifically, Dewey identified four forms of funded experiences: academic knowledge, feelings associated with the experience, practical experience, and imagination. Each person’s ability to make sense of the world depends on his/her own fund of experiences in a web of cognitive, affective, and imaginative capacities. By reflecting before acting, thinkers can make use of their experiences before deciding what to do or believe. As Dewey wrote, “Thinking is specific, in that different things suggest their own appropriate meanings, tell their own unique stories, and do this in very different ways with different persons” (p. 46). In the current study, Dewey’s model of reflective thinking is relevant to the theoretical framework. His understanding of experiential-based knowledge and “funded experiences” provided support for the associative responses to music listening examples written by the subjects in the current study.

Ennis’s view of generalized critical thinking is also relevant to this discussion. As a generalizable skill, critical thinking includes mental discipline, logical reasoning, and rigorous inquiry (Ennis, 1962). These general mental abilities are required to play a game of chess or to write an essay. In keeping with this view, the educational value of school is to develop general reasoning power. Ennis proposed a basis for research in the teaching and evaluation of critical thinking in his article “A Concept of Critical Thinking” [italics in original]. Ennis based his article on the assumption that critical thinking is “the correct assessing of statements” [italics in original] (p. 84), and he proposed twelve general
aspects of critical thinking in the form of “grasping the meaning of a statement” (p. 85) and making judgments without reference to a specific field of study. The types of judgments included identifying ambiguity, assessing reliability, finding contradictions, noticing assumptions, and evaluating statements. Ennis stated his support for generalizable critical thinking skills as a basis for research and teaching. Generalized thinking skills, as explained below, are a part of the definition of critical thinking skills for the current study (i.e. the mental process of analyzing, synthesizing, comparing and contrasting, developing criteria for judgment, sequencing, making connections, recognizing patterns, or evaluating musical information through active listening, reasoning, and reflection based upon prior musical experience and affective responses). Ennis (1985, 1989) later expanded his approach to include four levels of critical thinking instruction, which differ by subject specificity along a continuum (i.e. general, infused, immersed and total). Ennis’s views of critical thinking are relevant to the current study in that they provide an example of generalized thinking skills in contrast to subject-specific thinking skills.

Norris (1985), however, articulated a context-specific view of critical thinking contradicting Ennis. In his synthesis of critical thinking research, Norris stated that critical thinking is dependent on knowledge. He also asserted that critical thinking is sensitive to context. Norris explained that students’ background and prior knowledge influence their ability to think critically and to draw inferences. In other words, critical thinking cannot and does not exist in a vacuum; critical thinking “requires individuals to apply what they know about the subject matter as well as their common sense and
experience” (p. 44). Norris’s view of critical thinking and its relationship to context are important to the current study. Through music listening experiences and responding activities in the current study, the subjects were given the opportunity to think critically about music.

McPeck (1981, 1990) also emphasized the influence of the subject area on critical thinking skills and articulated his position on critical thinking and thought processes within different disciplines. He offered a conceptual analysis of critical thinking and suggested that the subject area in which critical thinking is applied plays a vital role. McPeck suggested that thinking is context-specific and that each discipline requires different sets of intellectual skills. In other words, the domain of experience and nature of the subject area determine the character of thought required. The success of thinkers depends not only on the fit between their thought processes and the discipline, but also on their experience within the particular subject. McPeck (1981) identified ten features of critical thinking illustrating his subject-specific view; he wrote that critical thinking is always subject dependent, essentially “reflective skepticism,” and dependent on and limited by thinkers’ knowledge and skills in any area. McPeck went on to characterize critical thinking as a complex thought process, involving problem solving and active engagement in activities, and indicating both a task and an achievement. He also stated, however, that critical thinking does not necessarily imply success. McPeck’s inclusion of subject knowledge in critical thinking suggests that different types of knowledge support different types of thinking.
The importance of experience and prior knowledge in music was taken into consideration in the current study. Both CTI and ABI lessons provided the subjects with repeated listening experiences and included specific instruction in musical concepts and vocabulary such as melody, timbres, rhythmic subdivision, and form in music. Additionally, opportunities for critical thinking in the CTI lessons were designed to have the subjects engage in higher-order thinking skills and to draw upon prior experience and knowledge included in the lessons. The CTI lessons, therefore, were designed to have the subjects think in music on a higher cognitive level.

While not directly concerned with critical thinking, Gardner's research in cognitive psychology is closely related to subject-specific thought processes. With the publication of *Frames of Mind* (1983), Gardner introduced the idea of multiple intelligences. In addition to logical/mathematical and linguistic intelligences, he described musical, spatial, kinesthetic, interpersonal, and intrapersonal forms of intelligence. In an earlier publication, Gardner (1981) proposed five steps to aesthetic development. The fourth step, between ages 8 and 13, he defined as "The Breakdown of Literalism and the Emergence of Aesthetic Sensitivity." At this age, students are able to transcend literal meanings and stylistic elements. Gardner wrote, "now is the time to go beyond the literal readings of words, pictures and songs, and to attend instead--or in addition--to less denotational and more expressive aspects of these symbols" (p. 138). Gardner also asserted that students at this developmental stage are most receptive to pedagogical methods. Gardner's observations and assessment of students at this age are particularly relevant to the current study; the fifth-grade (eleven to twelve-year old)
students who comprised the CTI classes were asked to express their affective and extramusical associations in response to the music listening examples.

Paul (1993) also suggested that the nature of thought was influenced by specific disciplines. Similar to McPeck (1980, 1991) and Norris (1985), Paul supported a context-dependent view of critical thinking. Taking a subject-specific perspective of critical thinking, Paul advocated teaching content as well as thinking skills. Paul asserted that students do not need to learn any subject simply as a body of facts; they can learn information while thinking critically in that discipline. The basic tools of reasoning can be applied to any subject area to encourage thinking appropriate to the subject. Therefore, according to Paul, students can learn to think mathematically, economically, and musically in accordance with these disciplines. When making decisions thoughtfully, learners must think reflectively by suspending initial reaction long enough to weigh alternatives and think about beliefs and actions. Commonly accepted critical thinking skills provide a means to weigh alternatives and make judgments.

Paul's view of critical thinking as making decisions thoughtfully and learning to think, as a function of specific disciplines, is important to the current study. Also important is Paul's view of listening in critical thinking. Paul described the nature of listening as an active and skill-based process, learned by degrees and mastered at various levels of proficiency. In contrast to didactic theories in which listening is a function of will power and self-discipline, Paul asserted that listening is a learned skill. Paul wrote that "students need to be taught how to listen critically . . . by private or public dialogue
... and this involves critical thinking” (p. 461). Paul’s view of critical thinking is consistent with an approach combining subject-specific skills with generalized thinking skills. In the current study, the CTI subjects built context-specific vocabulary and developed their musical knowledge while applying critical thought processes to the music listening examples.

In a music context, Woodford (1995) continued Paul’s line of reasoning and advocated combining generalized and context-specific approaches to critical thinking. While much of the prior literature on critical thinking in music was based on the generalized skills, Woodford suggested that the nature of critical thinking in music has characteristics of both generalized and context-specific skills. Woodford defined critical thinking in music to address a gap he perceived in the related literature. Woodford wrote:

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critical thinking is both general and context-specific in nature. That is, while context-specific thinking skills and abilities exist, implicit to them are general thinking skills such as discrimination, comparison and contrast, judgment, and possibly, metacognition (i.e., the ability to be aware of and to assert some measure of control over one’s own thinking) (p. 36).
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He criticized neither the generalizable or context-specific view, but questioned the importance of making such a distinction between thinking skills. In other words, general thinking skills function in some specified, contextualized way. Furthermore, without some experience and prior knowledge in a subject area, there is little chance for transfer of learning to take place.

Woodford also asserted that critical thinking in music extends beyond problem solving and decision-making. He contended that critical thinking in music “is about
developing one's musical individuality or self" (p. 36). To this end, Woodford advocated teaching music with an emphasis on the students' own ideas and understandings of musical experiences through music listening or performance. Woodford's view of critical thinking in music has relevance to the current study in that he proposed thinking in musical contexts using both generalized and context-specific thinking skills. CTI lessons are supported by Woodford's advocacy of musical individuality through sharing personal reflections and created meaning in response to music listening experiences.

**Critical Thinking Applied in Musical Contexts**

Related to the current study are previous investigations of critical thinking in musical contexts. Because various definitions of critical thinking include problem solving, higher-order thinking skills, and reflective thinking, studies taking these approaches to musical tasks are included in this review of literature. The studies reviewed in this section are divided into two groups: those involving music listening, and those involving composition and problem solving as the musical tasks. As in the current study, some researchers have investigated music listening tasks as critical thinking or problem-solving exercises (Cutietta, 1982, 1985; DeTurk, 1988; Johnson, 2003), while other researchers have investigated music composition and problem solving as critical and reflective thinking (Barett, 1990; DeLorenzo, 1987, 1989; Younker & Smith, 1996). A discussion of these studies and their relevance to the current study follows in this section.
Music Listening as Critical Thinking

Cutietta (1982, 1985) investigated the problem solving strategies of adolescent learners. He presented the students, aged eleven to sixteen, with an analytic listening task, investigated the nature of their hypothesis-testing strategies (either successive or simultaneous), and categorized the subjects' responses as a reflection of their musical focus. Citing the importance of concept development to music educators, Cutietta played eight musical examples in pairs and instructed the subjects write what each pair had in common. The three musical concepts illustrated by the listening examples were polyphony, melody and variations, and repetition. By analyzing the written responses from a random sample of students from twelve public schools in six different geographic regions (n = 330), Cutietta found that eleven to thirteen year-old subjects compared the two examples successively while fifteen to sixteen year-old subjects compared the examples simultaneously to accomplish the same task. Perhaps as a function of the differences in formal operational thought between the ages of eleven and sixteen, the subjects displayed an increasing ability to manipulate hypotheses even though overall musical knowledge did not noticeably increase. Additionally, Cutietta found three kinds of hypotheses were used: elements of music, styles of music, and descriptions of music. At all ages between eleven and sixteen, hypotheses based on musical elements were more numerous than those based on either style or descriptions; the frequencies of hypotheses based on musical elements, style, and descriptions were 69%, 18%, and 13% respectively. As in Cutietta’s investigation, subjects in the current study also compared different musical examples to complete the measure “Listening and Thinking.” The
subjects' written responses were also analyzed for content on the dependent measure. Cutietta’s findings are also relevant to the current study given the subjects’ age in fifth-grade, ten to twelve years old.

Students’ descriptions of music during a music listening task were also investigated by Johnson (2003) in a qualitative study. Johnson presented fifth-grade instrumentalists with a problem-solving task based on music listening. The participants sorted fifteen short musical examples into groups without any further instruction from the researcher. Four categories of descriptors emerged from the participants' written and verbal responses to the music (i.e. musical terms, affective, associative, and other). Examples of each category included “fast,” “slow,” and “loud” in the musical term category; “nice,” “pretty,” and “scary” in the affective category; “Alice in Wonderland,” “riding in a car,” and “Louisiana trip” in the associative category; and “different” in the other category. Even though musical terms were most often used as descriptive and sorting data, Johnson suggested that affective and associative descriptors of music be included in music listening instruction. In a similar manner to Cutietta’s study, Johnson’s investigation is relevant to the current study with respect to the ways musical examples are conceived and organized by listeners. The descriptors provided by the subjects in Johnson’s study served as the model for the four dependent measures on the “Listening and Thinking” instrument (i.e. Musical Term, Affective, Associative, and Total response scores). In addition, the theoretical approach used by Johnson is shared by the current study. Finally, Johnson used a verbally-based methodology, which is, in part, similar to that employed in the current study.
DeTurk (1988) also employed a written measure of music listening skills in his dissertation study involving older students. Using a written measure of critical thinking, DeTurk (1988) investigated the correlation between years of experience in a performing ensemble and scores on essays written in response to two listening examples. The subjects, high school juniors, were instructed to describe, compare, contrast, and make evaluative statements about the two listening examples. The subjects’ essays were scored by three independent judges using the SOLO ("Structure Of Learning Outcomes") taxonomy. DeTurk found a significant difference ($p = 0.05$) on the essay scores by years of performing experience.

In a post-hoc analysis, however, DeTurk also found that a significantly higher essay score was associated with six or more years of experience in a performance ensemble. He found that subjects’ essay scores were more closely related to the last English grade than to the years experience in a performance ensemble, suggesting an interaction effect between the dependent measure and the essay writing methodology. The subjects’ writing facility and general language skills may have influenced their score on the written essay test. Even though the critical thinking process in DeTurk’s investigation may have been confounded with the essay-writing methodology, this study is relevant to the current study. The similarities between the two studies include critical thinking in response to music listening and a written measure of the thinking process. Although the writing element at the fifth-grade level in the current study was less involved than high-school level essays, written responses were exclusively used in the
dependent measure and therefore are important to interpreting the results of the current study.

Music Composition and Problem Solving as Critical Thinking

While the above researchers have investigated music listening as problem-solving and reflective thinking, other investigators have examined the compositional process and problem solving as examples of critical thinking. Even though the subjects in the current study did not compose any music, the following studies are summarized below in order to broaden the definition of critical thinking in musical contexts.

DeLorenzo (1987, 1989) studied sixth-grade students’ use of creative problem-solving skills as defined by Ennis, Sternberg, and Dewey. She based her qualitative investigation on this musical task: “Given three measures of rhythm in 4/4 meter, clap a fourth measure using quarter- and eighth-notes rhythms. . . . Take the rhythmic phrase from the previous example and use it as a basis for an original rhythmic composition” (1989, p. 191). She collected and analyzed interview, videotape, and ethnographic data. DeLorenzo found that students were either highly involved or uninvolved in solving the musical problem, depending on the student’s perception of the problem and how closely the problem structure matched the student’s personal definition of music. She also found that if fewer choices were made available to the student, the level of involvement decreased, and that only superficial involvement resulted if the musical problem required skills beyond the student’s present skills. DeLorenzo’s study provided the background for a definition of musical problem solving within Dewey’s model of reflective thinking. This theoretical connection is relevant to the current study. Another relevant connection
supporting the efficacy of classroom activities and discussions in the current investigation may also be found in DeLorenzo’s study. DeLorenzo found that participating in exploratory activities and classroom discussions benefited the students during their problem-solving tasks. The current study includes similar exploratory activities and classroom discussions as part of CTI lessons.

Barrett (1990) investigated the musical problem solving with elementary-aged students using a qualitative methodology. She approached problem solving in terms of musical schemata, forms of representation, and cognitive strategies. Twenty fourth-grade students participated by first singing a familiar melody, and then playing the same melody on resonator bells without prior instruction or demonstration. Using videotape, performance, and structured interview data, Barrett found that subjects used three cognitive strategies (i.e. temporal order, comparison, and inferring) in solving the problem. She also found three different types of problem solvers: aural, visual, and non-solvers. By combining interview data with the actual renditions of the melody, Barrett explored not only the solutions but also the solution processes used by the subjects. The multiple learning modalities, aural and visual, in Barrett’s findings have relevance to the current study; in both CTI and ABI lessons, multiple learning modalities are used to explore and represent music listening examples. Additionally, the three cognitive strategies identified by Barrett support the CTI treatment used in the current study. Critical thinking demonstrated by the fifth-grade subjects in the current study included identifying patterns, sequencing, and making comparison. Barrett’s findings support the validity of sequencing and comparing examples in a musical context.
Younker and Smith (1996) also studied the connection between writing music and higher-order thinking processes; specifically, the authors investigated qualitative differences among individuals engaged in the process of composing music. Citing Dewey’s writings, the authors based their investigation of musical problem solving on four important aspects: the process of composition instead of the product, knowing instead of knowledge itself, active involvement instead of passive reception, and discovery instead of memorization. Younker and Smith also framed their study with attention to evaluation, reflecting, metacognition, creative thinking, and critical thinking.

The authors used verbal protocol analysis (i.e. thinking out loud) and audio recordings to explore possible developmental differences during a compositional task demonstrated by four participants: an adult expert, an adult novice, a high school expert, and a high school novice. The authors found four distinct approaches based on the participant’s experience and developmental level. Younker and Smith also found that both the expert and novice composers used three forms of input: tactile, visual, and aural. The novice composers approached the compositional task sequentially and demonstrated a less holistic approach than the expert composers.

Younker and Smith’s theoretical connection between musical activities and elements of higher-order thinking is relevant to the current study. Also pertinent to the current study is the use of feedback statements, both evaluative and descriptive, that furthered the musical process. The authors reported that the participants’ statements explained and clarified musical elements such as style, form, tonality, and melody, as well as reactions of approval and disapproval. In the current study, verbal responses to
music listening experiences in the form of interactive classroom discussions served a similar function during the CTI lessons. Although subjects in the current study did not compose music, they engaged in music listening which was involved in Younker and Smith’s study; the authors characterized composing music as “an experience in which students interact with musical elements just as they do when they . . . listen perceptively and creatively” [italics in original] (p. 25).

In this section, the application of critical thinking skills in musical contexts was discussed. The acts of listening and composing, most relevant to the current study, were explored through experimental and descriptive research studies. The above studies, however, did not include an exploration of specific questioning strategies in music listening instruction. A discussion of questioning strategies as an instructional technique follows in the next section.

**Questioning Strategies as Instruction**

Questioning strategies used by teachers have been shown by educational researchers to make a crucial difference in the type of learning exhibited by students. As Wilen (1987) wrote, “the primary effectiveness of the teacher lies in his or her ability to stimulate and guide students’ thinking” (p. 9) through the use of thoughtful questions. When teachers ask questions, they are engaging in the single most important teaching act (Taba, 1966). Teachers are professional questioners (Aschner, 1961) and ask over 300 questions a day (Levin & Long, 1981), which constitutes one-tenth to one-sixth of all classroom contact time (Dunkin & Biddle, 1974). The prevailing view in the literature is
that a teacher’s questions are an important variable affecting student achievement, and that particular types of questioning strategies are more effective in promoting student achievement than others (Redfield & Rosseau, 1981). Eighty percent of questions asked by teachers in classrooms, however, require students to do something other than think (Gall, 1984). This finding, relatively consistent during for seventy years (Cunningham, 1971), is the reason for a narrow choice of questions commonly used in instruction (Wilen, 1987). Over 95 percent of the questions contained in an analysis of 61,000 workbooks, tests, and teacher manuals were found to require lower-order thinking (Trachtenberg, 1974).

In the current study, one central difference between CTI and ABI lessons was the use of questioning strategies by the teacher. While both CTI and ABI used identical materials and classroom activities, the questioning strategies and other opportunities for critical thinking distinguished the two instructional treatments. The research on questioning strategies as the basis for instruction is therefore central to the design of the current study. In the following section on the use of questions as instructional strategies, recommendations from one textbook (Atterbury & Richardson, 1995), suggestions from two journal articles (Kassner, 1998a, 1998b), findings from two research articles (Gall, Ward, Berliner, Cahen, Winne, Elashoff, & Stanton, 1978; Wilen & Clegg, 1986), and results from one analysis of existing studies (Redfield & Rousseau, 1981) are presented.

In a textbook for classroom teachers, Atterbury and Richardson (1995) advocated thought-provoking questions and suggested activities to support music listening lessons. Examples of teacher-directed questions and activities included: think about how this
music makes you feel, listen with your eyes closed, and raise your hand at the end of each phrase. The authors suggested that teachers give instructions before and after listening examples rather than during listening activities to highlight the music itself. Strategies similar to those suggested by Atterbury and Richardson are utilized in the current study. The authors' recommendations for listening practices support the CTI and ABI lesson plans. The current study is also directly related to the authors' advocacy of thought-provoking questions and support for listening lessons; directions for critical thinking and music listening are incorporated into CTI lessons, and absent from ABI lessons.

Beyond listening activities, Kassner (1998a & 1998b) offered examples of higher-order questioning techniques in music classes and ensembles. In the form of articles that provide practical guidance to teachers, he advocated accessing higher levels of cognition (i.e. evaluation, synthesis, and analysis) through questions asked by teachers to stimulate, engage, and challenge their students. In an extensive flow chart, Kassner illustrated factors that teachers should consider when asking students questions related to a musical activity. While listening to music, for example, he suggested that questions could assist students in focusing their attention on specific musical elements. Kassner suggested that intelligent questioning and following up in response to students' answers could lead to "increased enjoyment, involvement, and student ownership in the music-learning process" (1998b, p. 33). In the current study, the use of specific questions to foster critical thinking was one key component distinguishing the two instructional treatments. Questions asked by the teacher were used as guides for classroom discussions to encourage subjects' critical thinking and listening skills in the CTI treatment.
Additionally, the teacher asked follow-up questions in the CTI lessons to clarify student responses as suggested by Kassner.

Support for Kassner's assertions can be found in an experimental study published by Gall, Ward, Berliner, Cahen, Winne, Elashoff, and Stanton (1978). In a two-part study, the authors investigated the effects of including higher-order cognitive questions in classroom instruction on student achievement and attitude. The authors found that instruction including higher-order cognitive questions was more effective with respect to student achievement and attitude when compared to parallel instruction without higher-order cognitive questions.

In the first part of the study published by Gall et al. (1978), twelve teachers were randomly assigned to teach an ecology unit consisting of ten daily lessons using one of four instructional treatments. The subjects in this experiment, 336 sixth-grade students, were randomly assigned to one of four groups. The four instructional treatments were: 16 scripted questions (including higher-order cognitive questions) with probing and redirection, 16 scripted questions (including higher-order cognitive questions) without probing or redirection, a filler activity related to the unit, and an art activity which included no questions. Gall et al. reported that there was no significant difference in student achievement between the first two instructional treatments. The authors, however, found that the students receiving the first three treatments demonstrated significantly higher achievement and attitude scores ($p < 0.05$) than the students receiving the art activity instruction. The authors wrote that instruction in the first three instructional treatments "is effective in promoting knowledge acquisition and retention, higher
cognitive response ability (both oral and written), and attitudes toward curriculum topics” (p. 188).

In the second part of the study, a similar format was used by Gall et al. (1978) to teach 371 sixth-grade students in four different instructional treatments. Three of the four treatments differed by the percentage of higher-order cognitive questions (HCQ) asked by the teacher: the first treatment contained 25% HCQ, the second treatment contained 50% HCQ, and the third treatment contained 75% HCQ. As in the first experiment, the art activity was compared with three other instructional treatments. Gall et al. reported that there was a statistical difference (p ≤ 0.05) in students’ achievement scores by instructional treatment; the first and third instructional treatments, containing 25% and 75% HCQ respectively, resulted in significantly higher student achievement than the second and fourth instructional treatments, containing 50% HCQ and no HCQ.

Additionally, the students receiving the first three instructional treatments demonstrated significantly (p ≤ 0.05) more positive attitudes than those receiving the art activity instruction. The authors addressed prior criticism of similar studies including vaguely defined teacher behaviors, questions of treatment validity, unverified content validity, nonrandom assignment of students to groups, and too brief a period of experimentation (Berliner, 1976; Heath & Nielson, 1974), by including semi-programmed teaching, audio taping of lessons, random observations, and a treatment period of ten fifty-minute lessons. The study published by Gall et al. is directly relevant to the current study. A comparison of students’ responses to music listening based on the type of instruction received (i.e. CTI or ABI) is analogous to the instructional treatments compared by Gall
et al. Additionally, subjects in the current study and the study published by Gall et al. were developmentally similar.

Wilen and Clegg (1986) summarized five major reviews of literature on effective questioning practices and found support for the achievement-related results reported by Gall et al. (1978). Wilen and Clegg found that students' achievement was associated with the types of questions asked by teachers. The authors wrote, "Questioning is considered an influential teaching act because it is the most basic way teachers use to stimulate participation, thinking and learning in the classroom" (p. 153). Among the questioning practices used by effective teachers were: asking high-level cognitive questions, inviting students to respond in some way to each question, and probing students' responses to encourage thinking. Each of these findings relates to CTI in the current study; CTI lessons included higher-level cognitive questions, opportunities for each student to respond to the questions asked, and following up with students to explain their thinking based on their initial answers. CTI lessons represented a step in the direction suggested by Wilen and Clegg; they wrote, "the challenge now is to study more intensely those questioning strategies that lead to higher order thinking, to value analysis to creative responses to new situations, and to independent thinking" (p. 159).

In a more comprehensive analysis of related studies, Redfield and Rousseau (1981) reported similar findings with respect to student achievement. The authors reviewed data collected on the effect of teacher questioning procedures on student achievement. Two criteria were used to select twenty studies for review: either an experimental or a quasi-experimental design was used, and a distinction was made
between higher-order and lower-order cognitive questions. In Redfield and Rousseau's review, higher-order cognitive questions were defined as questions that required students to manipulate information in forming their responses; these operations corresponded to application, analysis, synthesis, and evaluation in Bloom's Taxonomy of Educational Objectives (1956). Conversely, lower-order cognitive questions were defined as questions requiring a verbatim or factual response; these operations corresponded to the knowledge and comprehension levels of Bloom's taxonomy. Following a meta-analysis, Redfield and Rousseau found that gains in achievement were associated with the use of higher-order questions. Specifically, the mean effect size (ES) for all studies reviewed was 0.7292. As Redfield and Rousseau explained,

> predominant use of higher level questions during instruction has a positive effect on student achievement. That is, the "average" student could be expected to score at the 77th percentile after treatment [with higher order questions] as opposed to the 50th percentile where he or she would be assumed to score if not treated [with higher order questions] at all (1981, p. 241).

In this study, the authors found a positive relationship between the use of higher-order questions and student achievement; in other words, "gains in achievement can be expected when more higher cognitive than lower cognitive questions are used during instruction" (p. 244). In the current study, Redfield and Rousseau's meta-analysis supports the expectation that CTI is associated with improved listening skills.

Redfield and Rousseau's results, however, contradicted those found by Winne (1979). Winnie also reviewed eighteen of the same twenty studies examined by Redfield and Rousseau and found no advantage to using higher-order cognitive questions. The
method of analysis applied to the same data or incongruent definitions of higher and lower-order cognitive questions may have been the reason for the disparity between findings. In either case, the majority of research on higher-order questioning techniques supports the current investigation on the effect of critical thinking questions as part of music listening instruction.

Verbal Data as Evidence of Thinking Processes

Listening is a complex mental process "by which the raw data of sensation is transformed into perceptions . . . and eventually into the ideas and concepts of various styles and forms in music" (Mueller, 1956, p. 18). Therefore, the methodology employed in assessing thinking about music is the main problem of listening studies (Sloboda, 1985). Findings from previous studies provided important background information related to the methodology chosen for the current study. Even though writing may be a challenging task for children, Herberger (1983) and Flowers (1984) found that children were able to respond successfully to music listening experiences using written responses. Other researchers discussed previously have investigated musical problem solving (Cutietta, 1982, 1985; DeLorenzo, 1987, 1989; DeTurk, 1988; Johnson, 2003; Younker & Smith, 1996) and listening skills (Andrews, 1962; Bundra, 1993; Flowers, 1984, 2000; Herberger, 1983; Richardson, 1988; Rives, 1970; Whitaker, 1989) using verbally based measures. This section contains a discussion of studies in which verbal data was used as evidence of listening and thinking skills in musical contexts (Cutietta & Thompson, 2000; Flowers, 2003; Haack, 1992; Hair, 1987; Mueller, 1956). In both oral and written
forms, verbal responses played an important part in the CTI treatment and the dependent measure “Listening and Thinking” in the current study. Therefore, the underlying issues of verbal data are explored to support the validity of using subjects’ written and spoken responses as evidence of critical thinking and listening skills.

Analyzing words written or spoken about music offers music researchers a promising source of data (Haack, 1992). Because of the nature of Western culture, words play a dominant role in the transmission of ideas and information; words are a primary means of communication. Because words are among listeners’ primary means of communicating with each other, language provides an efficient method of describing musical experiences (Mueller, 1956). Additionally, Hair (1987) wrote that verbal descriptions of music “may be more important in our understanding of the music process than many researchers in music education may have believed” (p. 60). Similarly, Andrews and Diehl (1967) noted that studying children’s verbalizations about music could indicate their conceptual understanding. Simply asking students what and how they think about music is an effective means of investigating their music listening experience (Rodriguez & Webster, 1997).

The application of verbalizations about music includes the use of verbal instructions in music classrooms. Learning musical terms and using them in verbal responses to listening activities allows students to form concepts and share their thinking with others. Furthermore, “Listening to, analyzing, and describing music” and, “Evaluating music and music performances” are content standards number 6 and 7, respectively, of the “National Standards for Music Education” in the 1994 Standards for
Arts Education. Specifics of these standards include: demonstrating perceptual skills through description, using appropriate musical terminology to describe musical experiences, and describing specific musical events. Using expressive and receptive language in musical contexts, then, is a practical means of music pedagogy.

To support the use of verbal descriptors in musical contexts, Flowers (2003) summarized four reasons to include descriptions of music in teaching and research. In an essay, she wrote that (1) listening to and describing music are interdependent activities which may be mutually beneficial; (2) writing interacts with and assists the focus of listeners’ attention; (3) verbal descriptions hold an important place in classroom practice and merit attention through informed discussions; and (4) musical descriptors are used as evidence of achievement according to the “National Standards for Music Education” in the 1994 Standards for Arts Education for grades K-8. According to Flowers, describing music does not provide substantial evidence of hearing acuity, yet describing music could indicate musical perceptions and musical knowledge. Citing her own published studies, Flowers also asserted that verbal description of music is a promising area for studying the listening experience; she wrote, “communication through the use of various forms of language, focus of attention on salient musical elements, and description of personal reactions are at the center of music learning and experience” (second section, third paragraph). Although language affects the way students form concepts (Gardner, 1987), Flowers suggested that language, attention, and listening are interdependent.

There are several inherent challenges in relying on verbal reports of music listening experiences as evidence of listening skills. According to Reese (1980), “we
know more than we can say” (p. 77) about music. Similarly, Cutietta and Thompson (2000) questioned the accuracy of verbal descriptors and found that they were an incomplete measure of children's musical understanding. Perhaps words are an imperfect medium to explain musical ideas; however, as succinctly described by Pogrow, words are “the best mirror of the mind,” (cited in Willis, 1992, p. 5) and as such are important teaching and learning tools. As Swanwick (1988) wrote:

What students have to say or “tell” about this experience is important. Although what can be said will always be partial and provisional, such discourse will be an essential part of teaching and learning. Sensitive musical criticism has the power to enhance musical response. (p. 132)

Despite concerns raised about students’ abilities to describe music using words, musical experiences and verbal descriptions are closely connected. For example, in program notes, music criticism, concert reports, analyses, personal reflections, and creative writing, words are routinely used to describe music (Flowers, 2003). Flowers also asserted that writing about music represents the process of discovery and “serves many purposes and audiences, ranging from technical analyses, to communicate about content and perception, to emotional expression” (final section, fifth paragraph). Listeners can communicate what they hear analytically, metaphorically, and emotionally through words.

**Implications of Related Literature**

Implications of previous studies include recognizing that music listening instruction has historically been based on acquiring musical terminology without much
regard for reflective or higher-order thought processes. Research in music listening instruction has focused on teaching technical music vocabulary, open-ended essay responses, and the effect of participation in performing ensembles. As Whitaker (1996) wrote, there is a need to move beyond academic knowledge and other prerequisite experiences for successful problem solving (e.g. affective reactions and imagination). There is also a need to challenge students with problems that have multiple solutions and demand more from them than rote performance or the application of technique “to encourage thoughtful, reflective musical autonomy in our students, regardless of age level” (Whitaker, 1996, p. 13). Music educators advocating for curricular inclusion must demonstrate that music involves sequential study, not merely activities (Lehman, 1994).

In addition to creating, presenting, and perceiving in the arts, essential components of the educational process are analysis and synthesis. These processes support higher-order thinking and promote the arts as expressions of critical thought.

With respect to verbal descriptions of music, Haack (1992) wrote that, “the combining of musical experience with verbal information about it remains the most likely and most potent means of imparting music education” (p. 460). The use of figurative language and the development of evaluative tools for use with verbal data are important and have the greatest need for future attention in the research agenda for listening instruction. Although words cannot substitute for a listening experience, continued investigation of verbal and musical information is a promising avenue for future research.
Summary

In summary, the review of related literature in this chapter included an exploration of music listening and music listening instruction. Additionally, perspectives on critical thinking were discussed with applications in musical contexts. Finally, questioning strategies as a means of instruction and the use of verbal data as evidence of listeners' thought processes were explored in relation to the current study.

The extensive related literature on music listening provided numerous perspectives of the listening experience with educational implications. Previous studies on music listening instruction included both successful and unsuccessful attempts to design effective music listening pedagogies. To achieve their objectives in music listening researchers have taken contrasting approaches including didactic teaching, experiential education, as well as inductive and deductive reasoning in an effort to change listeners' responses to musical examples.

The definition of critical thinking and its generalizability were discussed as two central issues from numerous scholars' perspectives. From constructivist paradigms to educational interventions, critical thinking was also discussed as a movement based both on theory and applied techniques. Among the goals of this movement is the responsibility to educate independent thinkers and autonomous learners (Paul, 1993). In a synthesis of research on critical thinking, Norris (1985) highlighted the following ideas:
• Critical thinking is a complex of many considerations
• Critical thinking is an educational ideal
• Teachers should look for the reasoning behind students’ conclusions
• Having a critical spirit is as important as thinking critically
• We do not know a great deal about the effects of teaching critical thinking. (p. 44)

In the above points, Norris asserted that critical thinking is an educational ideal, not an option. Instead of marking answers as “right” or “wrong,” Norris suggested that teachers probe and seek to understand students’ thought processes.

The scope of research on critical thinking in music listening was somewhat limited. Consequently, the review of literature included studies on critical thinking applied in compositional and musical problem solving. Previous authors approached musical tasks as reflective thinking, critical thinking, and problem solving using higher-order thinking skills. Studies explored in this chapter provided support for the current investigation of critical thinking skills as the basis for a pedagogical approach in a musical context.

The use of questioning strategies as a pedagogical approach was explored in the literature related to students’ thinking skills in educational settings. The prevailing view supported the positive influence of questioning strategies on students’ learning. In particular, higher-order cognitive questions were often associated with higher student achievement.

Additionally, related literature on verbal data as evidence of thought processes was discussed in this chapter. The use of verbal data in previous studies was explored to provide a methodological background for the current investigation. Issues underlying the
use of verbal data in musical contexts included the connection between words and music as well as the challenges involved in assessing musical understanding through written data.

In conclusion, researchers have investigated generalizable critical thinking skills as well as their applications in music and related fields. With an appreciation for the complexity of thought processes, authors such as Norris (1985) and Paul (1993) have underscored the importance of context in critical thinking. Experimenting with music as a context for reflective thinking, researchers have developed new understandings regarding pedagogy and musical problem solving. As critical thinking may be a useful tool in music and because educating for musical independence is a central goal of music education (Boardman, 1989; Wiggins, 2001), critical thinking instruction may assist listeners to think autonomously in music. Further research is necessary to explore the efficacy of critical thinking instruction in music listening.
Restatement of Purpose

The purpose of this study was to determine the effect of instruction that included opportunities for critical thinking during music listening on the written responses of fifth-grade students. The researcher investigated differences in subjects' responses by test (pretest and posttest), by treatment (critical thinking instruction and activity-based instruction), and by test by treatment. Specifically, the effect of critical thinking instruction (CTI) as compared to activity-based instruction (ABI) on subjects' written responses was investigated in the current study.

Sample

Subjects chosen for participation in this study comprised a population of eighty-one (81) fifth-grade students attending a public elementary school in the southwestern United States. Three percent of the subjects qualified for free or reduced lunch, suggesting that the subjects had mid- to upper socioeconomic status. The population included a majority of Caucasian subjects (82%), with Hispanic (9%), Asian (8%), and African (1%) ethnicities comprising the remainder of the sample. The sample contained a comparable number of boys and girls overall and in each treatment group. There were a total of forty-two (42) boys and thirty-nine (39) girls in the sample; specifically, twenty-two (22) boys and nineteen (19) girls comprised the CTI treatment group, while twenty (20) boys and twenty (20) girls comprised the ABI treatment group. The subjects had an
average age of eleven years and two months and ranged in age from ten years and two months to twelve years and four months at the time of the current study.

The two groups of subjects (CTI and ABI) were comprised of two randomly assigned, intact, fifth-grade classes each. Four intact classes of subjects participated in the current study. Each class was numbered sequentially according to the regular music class schedule and was randomly assigned to either the CTI or ABI group. The CTI group \((n = 41)\) received Critical Thinking Instruction, and the ABI group \((n = 40)\) received Activity-Based Instruction. Descriptions of specific activities and content in the two treatment methodologies follow later in this chapter. Each class received four lessons per week for four weeks. With the exception of the Wednesday lesson for CTI Class 4, all lessons were held at consistent times during the school day; it was determined that this variation in schedule did not have a substantial effect on the overall outcome of the current study. See Table 1 for a summary of the weekly lesson schedule by class and treatment group.

Table 1. Daily Schedule of CTI and ABI Lessons by Class and Treatment Group.

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15-10 AM</td>
<td>1 (CTI)</td>
<td>1 (CTI)</td>
<td></td>
<td>1 (CTI)</td>
<td>1 (CTI)</td>
</tr>
<tr>
<td>10:45-11:30 AM</td>
<td>2 (ABI)</td>
<td>2 (ABI)</td>
<td>2 (ABI)</td>
<td>2 (ABI)</td>
<td></td>
</tr>
<tr>
<td>11:30 AM-12:15 PM</td>
<td>3 (ABI)</td>
<td>3 (ABI)</td>
<td>4 (CTI)</td>
<td>3 (ABI)</td>
<td>3 (ABI)</td>
</tr>
<tr>
<td>2:30-3:15 PM</td>
<td>4 (CTI)</td>
<td>4 (CTI)</td>
<td></td>
<td></td>
<td>4 (CTI)</td>
</tr>
</tbody>
</table>
The current study was performed with the permission and approval of all necessary parties. Approval for the current study was first obtained from the university's Human Subjects' Committee. The dissertation site was determined after a series of telephone interviews with local principals and music teachers. The school's principal and assistant superintendent then issued the site authorization for the current study. With the support of the school's principal, assistant superintendent, and music teacher, a letter of introduction from the researcher was sent to the subjects' parents or guardians to recruit subjects for the study.

To participate in the study, the parents or guardians were required to return signed and dated permission forms. The students were also required to return signed and dated assent forms. The cooperating teacher also signed and returned her permission form prior to the beginning of the current study. See Appendix A for copies of the university's Human Subject Approval letters, permission forms, student assent form, and introductory letter. Eighty-one (81) of the eighty-six (86) students enrolled in the selected classes agreed to participate and returned permission and assent forms. Students who did not return a permission form or who declined to participate in the current study were excluded from data analysis. Additionally, one hearing-impaired student, a member of class 3, was excluded from the study on the basis of her disability. However, she regularly participated in all classes with the assistance of a sign-language interpreter. It was determined that the student's participation and the interpreter's assistance did not significantly influence other subjects in her class, as the hearing-impaired student had
been a regular member of her class for the eight months prior to the current study. See Table 2 for a summary of the distribution of subjects by class and by treatment group.

Table 2. Distribution of Subjects by Class and by Treatment Group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Class(es)</th>
<th>Students Enrolled</th>
<th>Students Without Permission</th>
<th>Students Excluded</th>
<th>Students Participating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTI</td>
<td>1 and 4</td>
<td>42</td>
<td>1</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>21</td>
<td>1</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>ABI</td>
<td>2 and 3</td>
<td>44</td>
<td>3</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>22</td>
<td>1</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>22</td>
<td>2</td>
<td>1</td>
<td>19</td>
</tr>
</tbody>
</table>

Fifth-grade students were chosen to participate in this study because they are more likely to engage in speculative and imaginative processes than are younger students (Swanwick & Tillman, 1986). Swanwick and Tillman reported developmental differences in children's music learning behaviors in the *Spiral Model of Musical Development* (1986) and based their findings on data collected during four years of research involving elementary students. From a psychological viewpoint, eleven and twelve-year-old subjects also have a command of concrete operational thought (Piaget, 1929) and can draw logical inferences using deductive reasoning. Additionally, Serafine (1988) found that ten and eleven-year old subjects demonstrated evidence of musical thinking on a
series of temporal (listening for pattern and sequences) and nontemporal processes (listening for texture and timbre). She also found a rapid growth in musical understanding between the ages of eight and ten, as well as a decline between ages eleven and fifteen. Therefore, fifth-grade subjects were chosen for the current study.

**Dependent Variables**

A researcher-designed instrument, “Listening and Thinking,” yielded the four dependent variables for the current study: a musical term response score, an affective response score, an associative response score, and a total response score. Musical terms included references to the traditional elements of music (e.g. tempo, dynamics, melody, harmony, timbre, and form). Affective responses included references to the subject’s feelings and emotions (e.g. likes, dislikes, pleasant, and harsh). Associative responses included references to the subject’s personal experiences and non-musical descriptors (e.g. a summer vacation, a train, a bouncing ball, etc.). The total response score, by definition, was the sum of the subject’s musical term, affective, and associative response scores.

“Listening and Thinking” was comprised of twelve questions and was the dependent measure for the current study. The measure used listening prompts and multiple-choice suggestions similar to those contained in the “Music Responding Block” of the *1997 NAEP Arts Report Card* (Persky, Sandene, & Askew, 1998). During the administration of the measure, the subjects listened to a musical example, then answered two questions addressing possible uses of the musical example and its instrumentation,
respectively. A multiple-choice section preceded an open-ended response section in each question. The first two questions were:

1. Where might you hear this music?
   a) at a funeral
   b) for a lullaby
   c) at a parade
   d) at a dance

   What did you hear in the music that helped you make your choice?

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. How many instruments do you hear in this music?
   a) only one
   b) two
   c) three
   d) more than three

   How would you describe the instruments you hear in this music?

   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
The third and fourth questions were identical to the first two questions, and subjects answered them in response to a second musical example. For the fifth and sixth questions, the subjects listened to the first and second musical examples again and were asked to compare and contrast those examples as follows:

5 What is different about these two pieces of music?
   a) the speed of the music
   b) the style of the music
   c) the instruments used to make the music
   d) all of the above

What did you hear in the music that helped you make your choice?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
6 How do these two pieces of music compare?
   a) They are almost the same.
   b) They are a little the same.
   c) They are a little different.
   d) They are very different.

What did you hear in the music that helped you make your choice?

Questions numbered seven through twelve were identical to the first six questions, however two different musical examples were used. In total, four musical examples organized in two pairs were used in the “Listening and Thinking” measure and constituted what Bailin (1998) termed a “critical challenge” (p. 153) to encourage thinking and using resources of relevant knowledge, concepts, and experiences. For a copy of the “Listening and Thinking” measure with directions for the test administrator, see Appendix B.

Even though the “Listening and Thinking” measure used elements of the “Music Responding Block” of the 1997 NAEP Arts Report Card (Persky, Sandene, & Askew, 1998), scoring of the dependent measure took the form of a word count instead of a rubric. The scoring system used in the current study was designed to measure subjects’ reflection on the musical examples instead of their success in finding “correct” responses.
and to maximize consistency with an earlier study (Johnson, 2003) upon which “Listening and Thinking” was based.

The purpose of the dependent measure was to score evidence of the subjects’ critical thinking. Three independent judges scored each subject’s open-ended responses using a word count to find the number of musical terms, affective terms, and associative terms. Written responses to the twelve open-ended sections were scored by three independent judges as evidence of critical thinking related to the music listening examples (Brophy, 2000). The multiple-choice section in each question was provided to the subjects as a prompt to facilitate writing the open-ended response and was not scored.

The judges were trained by the researcher to score each subject’s open-ended response using a written scoring guide. The researcher instructed the judges to evaluate each answer three times: on the basis of musical terms, affective terms, and associative terms written by the subject. Musical terms were scored first. Examples of musical terms were: fast, slow, loud, soft, high, low, flutes, drums, and any other specifically musical term specifying the beat, rhythm, melody, tempo, or timbre. For each question open-ended question, the judges were instructed to count the musical terms used by the subject and score the responses as follows: 0 = no musical terms used; 1 = one musical term used; 2 = two musical terms used; 3 = three musical terms used; 4 = four musical terms used, etc. While there was a minimum score of zero, there was no upper limit or maximum possible score to allow for the possibility of students writing as much as they wanted. The judges were instructed to record each subject’s Musical Term score in the column MT for each question on a score sheet.
In the same manner, the judges were instructed to score the subjects' written responses on the basis of affective terms and on the basis of associative terms. Examples of affective terms were: happy, angry, sad, lonely, lovely, sweet, harsh, and any other terms related to emotions or feelings. Examples of associative terms were: a parade, my trip last summer, riding in the car, a ball bouncing, a movie, and any other terms related to extra-musical associations. The judges were instructed to count the affective terms used and the associative terms used by the subjects to determine the Affective Term (AFF) and Associative Term (ASSOC) scores, respectively. The sum of the Musical Term, Affective Term, and Associative Term scores was calculated by the researcher to determine each subject's Total Response Score. The researcher averaged the three judges' scores for each subject's responses to determine mean response scores.

The three independent judges were given additional instructions by the researcher to maximize the consistency of scoring. The judges were instructed to count terms that reflected the student's own thoughts instead of terms that were included in the questions themselves (e.g. "style" and "speed" in questions five and eleven) and to score responses consistently. If a subject wrote a single term more than once in a given question, the judges were instructed to count it only once. Finally, the judges were instructed to ignore any spelling or grammatical errors as long as the subject's response was decipherable. If a subject's response was not decipherable, the judges were instructed not to record any score for that item.

To further illustrate the scoring procedure, the researcher gave a scoring example to the judges; if a student wrote the following response: "It sounded like a carousel. It
was happy. It sounded lively and fast, with the bells, drums, and flutes playing together,”
the corresponding Musical Term, Affective, and Associative scores would be: 4 MT, 2
AFF, and 1 ASSOC, respectively.

Critical thinking questions used in “Listening and Thinking” as well as in the CTI
were based on the premise that “simply asking children what and how they think about
music reveals strategies for musical understanding and valuing” [italics in original]
(Rodriguez & Webster, 1997, p. 9). Instead of simple recall of facts or comprehension of
information, the “Listening and Thinking” measure was designed to elicit evidence of
higher order thinking skills. The subjects engaged in analysis, synthesis, and evaluation
by identifying components of the musical examples, by making generalizations about the
example’s musical purpose, and by comparing two contrasting musical examples.

“Listening and Thinking” was designed by the researcher based on Bloom’s Cognitive
Taxonomy of Educational Objectives (1956), used in a pilot study, and validated in
consultation with published experts in music education.

The three categories of responses (musical term, affective, and associative) were
identified in a previous study in which similar subjects described and sorted excerpts of
unfamiliar instrumental music (Johnson, 2003). In Johnson’s research, three categories of
descriptors emerged from the students’ written descriptions, sorting patterns, and
interview data. These three types of descriptors (musical terms, affective, and associative)
were similar to those proposed by Rodriguez and Webster (1997) and were consistent
with three philosophical positions on music: formalism, expressionism, and
referentialism, respectively (Abeles, Hoffer, & Klotman, 1984).
The researcher conducted a pilot study eight months prior to the beginning of the current study to determine the interscore and interjudge reliabilities as well as the practicality of administering the “Listening and Thinking” measure with a similar group of fifth-grade subjects \((n = 57)\). The same subjects listened to two different pairs of musical examples, heard the musical examples in two different orders, and responded in both written and oral forms. Three independent judges scored the subjects’ responses using a three-point scale. In the current study, however, the grading scale was eliminated to avoid a ceiling effect. To increase consistency in the judges’ scoring, the same three judges who scored the “Listening and Thinking” measure also scored the pilot study.

Using a series of one-way analyses of variance (ANOVAs), no significant differences were found in the subjects’ responses by musical example, by order of musical examples, or by form of data (i.e. written and oral) in the pilot study. Additionally, a Pearson’s Product-Moment correlation coefficient was found for each pair of judges’ scores and converted using a Fisher Z transformation, yielding an interjudge reliability of \(r = 1.0\). The four musical examples used in the pilot study represented different periods and styles, including Western art-music and popular genres. Each example was intended to have an obvious purpose (i.e. march, lullaby, rock concert, and dance). The researcher found the interscore reliabilities of the intended purposes for the four musical examples using the standard formula agreements/agreements plus disagreements (Madsen & Madsen, 1998) to be between 0.92 and 1.00. Each purpose was listed as one of the options in the multiple-choice questions and used as a writing prompt in the measure “Listening and Thinking.”
Covariate

Musical aptitude is “the potential for one to achieve in music, and music achievement is the level of skill that one has acquired as a result of his aptitude and his experience with music” (p. 46, Taggart, 1989). Audiation, the process by which the student hears and comprehends music when the sound is not physically present, is the basis of musical aptitude and therefore is fundamental to music achievement (Gordon, 1988). One type of audiation provides “the immediate readiness for intelligent listening to music” (p. 23, Gordon, 1988). Specific applications of audiation include listening to music and recalling music for the purpose of thinking about music. Prince (1972) suggested that research hypotheses on music listening should address “the most effective methods for teaching [musical] perception, and the limiting effects of aptitude . . . on perceptual learning, cognition, and judgment” (p. 454). Therefore two subtests of the Musical Aptitude Profile (Gordon, 1967/1995) were administered to all subjects at the beginning of the study. Melody (T1) and meter (R2) subtests were administered to provide an accurate measure of subjects’ overall music aptitude (Gordon, 2002).

The aptitude data were used as a covariate in the two-way multivariate analysis of covariance (MANCOVA) for the current study to eliminate any potential differences between subjects by treatment (Best & Kahn, 1998) and to address any variance in the subjects’ musical aptitude that could ultimately influence the statistical outcome (Kachigan, 1986).
Independent Variables

Independent variables in the current study were the instructional treatments (CTI and ABI), and the testing situations (pretest and posttest). Each group of subjects received one form of instruction and completed the dependent measure once before and once after the instructional period.

The four musical examples chosen for the listening experiences in CTI and ABI lessons were selected on the basis of their diversity, potential appeal to fifth-grade students, and musical qualities. Instrumental music was chosen for the current study because it is better suited for music instruction (Levinowitz, 1989). In other words, as Levinowitz explained in her synopsis on music listening instruction, listeners may be distracted by the words and pay less attention to the music itself if vocal music is used. Each musical example lasted approximately three minutes and illustrated a range of tempos, dynamics, instrumentations, and timbres. Levinowitz (1989) also suggested that musical examples should illustrate a variety of timbre, contrasting dynamics, rhythmic drive, and modalities. The four examples selected for the current study included varied timbres, dynamics, and rhythms. Additionally, the four examples chosen for the lessons were similar to the four selections used in the “Listening and Thinking” measure. Because students generally do not prefer music with slow tempos (Finas, 1989), three of the four selections had tempos between MM = 124 and 148. One selection with a slower tempo was chosen to provide a contrast to the other pieces. Additionally, because rock music is the most familiar genre of music among adolescents (Frith, 1978), one of the four pieces selected represented rock music. See Tables 3 and 4 for a description of the
musical examples used in the instructional treatments and the “Listening and Thinking” measure, respectively.

Table 3. Description of Musical Examples Used in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Composer</th>
<th>Title</th>
<th>Genre</th>
<th>Length</th>
<th>Tempo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>G. Bizet</td>
<td>“Prelude” from Carmen</td>
<td>Classical</td>
<td>2:18</td>
<td>124</td>
</tr>
<tr>
<td>5-8</td>
<td>Traditional</td>
<td>Arkansas Traveler/Sailor's Hornpipe/Turkey in the Straw</td>
<td>Folk</td>
<td>3:07</td>
<td>148</td>
</tr>
<tr>
<td>9-12</td>
<td>L. Story</td>
<td>Pavane</td>
<td>New Age</td>
<td>4:06</td>
<td>70</td>
</tr>
<tr>
<td>13-16</td>
<td>J. Satriani</td>
<td>Back to Shalla-Bal</td>
<td>Rock</td>
<td>3:16</td>
<td>142</td>
</tr>
</tbody>
</table>

Table 4. Descriptions of Musical Examples Used in “Listening and Thinking”.

<table>
<thead>
<tr>
<th>Example</th>
<th>Composer</th>
<th>Title</th>
<th>Genre</th>
<th>Length</th>
<th>MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>J. P. Sousa</td>
<td>King Cotton</td>
<td>Band</td>
<td>1:05</td>
<td>116</td>
</tr>
<tr>
<td>2</td>
<td>M. Clink</td>
<td>Bad Obsession</td>
<td>Rock</td>
<td>1:03</td>
<td>122</td>
</tr>
<tr>
<td>3</td>
<td>Traditional</td>
<td>Golden Slumbers</td>
<td>Lullaby</td>
<td>0:56</td>
<td>46</td>
</tr>
<tr>
<td>4</td>
<td>B. Whelan</td>
<td>American Wake/</td>
<td>Celtic</td>
<td>0:53</td>
<td>150</td>
</tr>
</tbody>
</table>

The Nova Scotia Set

The responding activities used in CTI and ABI lessons involved playing percussion instruments, creating musical maps, and movement with props. These
activities are widely used in elementary music textbook series. Moving to music, using props, and playing various pitched and unpitched classroom instruments are common activities in established music education pedagogies including the Dalcroze, Orff, and Kodály approaches, as well as Comprehensive Musicianship (Choksy et al., 2001). Responding activities during listening examples included gross and fine-motor movements, because movement is an experience fundamental to musical perception (Kopiez, 2002) and a key to auditory acuity and response (Lewis, 1989). Especially when teaching children in the upper elementary grades (ten years and older), the use of props enhances instructional movement activities (Weikart, 1982). In the current study, tennis balls, flags, and conducting batons were used as props to encourage student involvement in the movement activities. Sufficient materials were provided by the researcher to accommodate classes of up to twenty-two students each. See Table 5 for a listing of the props and materials used in CTI and ABI instructional treatments.

Table 5. Props and Materials Used in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-pitched metal percussion instruments</td>
<td>22</td>
<td>An assortment of triangles, finger cymbals, and flexatones</td>
</tr>
<tr>
<td>Non-pitched wooden percussion instruments</td>
<td>22</td>
<td>An assortment of rhythm sticks, wood blocks, and guiros</td>
</tr>
</tbody>
</table>
Table 5 (continued). Props and Materials Used in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tennis balls</td>
<td>44</td>
<td>Standard-sized yellow tennis balls</td>
</tr>
<tr>
<td>Conducting batons</td>
<td>22</td>
<td>Wooden dowels, measuring 12 x 1/8 inches</td>
</tr>
<tr>
<td>Markers</td>
<td>110</td>
<td>22 permanent chisel-tip markers of each color: black, red, green, yellow, and blue</td>
</tr>
<tr>
<td>Flags</td>
<td>110</td>
<td>22 flags, measuring 32x 8 inches glued to wooden dowels measuring 16 x 3/8 inches, of each color: white, red, green, yellow, and blue</td>
</tr>
<tr>
<td>Sheets of drawing paper</td>
<td>1 ream</td>
<td>Unruled, white paper measuring 8 1/2 x 11 inches</td>
</tr>
</tbody>
</table>

Instructional Treatments: Critical Thinking Instruction and Activity-Based Instruction

Each treatment consisted of sixteen (16) lesson plans designed by the researcher and presented by the teacher in four daily lessons per week for four weeks. Instruction in musical terms and concepts, repeated listening to musical examples, and activities in response to the listening examples (e.g. movement with flags and tennis balls, drawing
musical maps with markers, and conducting with batons) were used in both instructional treatments. For a summary of the musical terms and concepts contained in CTI and ABI instructional treatments, see Table 6.

Table 6. Musical Terms and Concepts Presented in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Concept(s)</th>
<th>Term(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Steady beat, tempo</td>
<td>Steady beat, tempo</td>
</tr>
<tr>
<td>2</td>
<td>Melodic motion, shapes</td>
<td>Ascend, descend, repeat, leap, step</td>
</tr>
<tr>
<td>3</td>
<td>Accents, volume</td>
<td>Dynamics, accents, decrescendo, crescendo</td>
</tr>
<tr>
<td>4</td>
<td>Form in music</td>
<td>Sections, rondo, A B A C A</td>
</tr>
<tr>
<td>5</td>
<td>Rhythmic subdivision</td>
<td>Quarter note, eighth note, sixteenth note</td>
</tr>
<tr>
<td>6</td>
<td>Melodic phrases</td>
<td>Phrase</td>
</tr>
<tr>
<td>7</td>
<td>Instrumental timbres</td>
<td>Timbres: violin (fiddle), bass, banjo</td>
</tr>
<tr>
<td>8</td>
<td>Form in music</td>
<td>Section, A B C</td>
</tr>
<tr>
<td>9</td>
<td>Rhythmic patterns</td>
<td>Ostinato</td>
</tr>
<tr>
<td>10</td>
<td>Cadences</td>
<td>Cadence</td>
</tr>
<tr>
<td>11</td>
<td>Instrumental range, register</td>
<td>Register, range, treble, bass</td>
</tr>
<tr>
<td>12</td>
<td>Form in music</td>
<td>Coda, A B A B Coda</td>
</tr>
<tr>
<td>13</td>
<td>Meter</td>
<td>Meter</td>
</tr>
<tr>
<td>14</td>
<td>Melodic phrases</td>
<td>Question and answer phrases</td>
</tr>
</tbody>
</table>
Table 6 (continued). Musical Terms and Concepts Presented in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Instrumental timbres</td>
<td>Timbres: electric guitar, electric bass, drum set</td>
</tr>
<tr>
<td>16</td>
<td>Form in music</td>
<td>Section, A B A'</td>
</tr>
</tbody>
</table>

Content validity regarding the above concepts and terms was supported by similar lessons in *Music in Childhood* (Campbell & Scott-Kassner, 2002), and the fifth grade editions of *Silver Burdett Music* (Crook, Reimer, & Walker, 1981) and *World of Music* (Beethoven, Davidson, & Nadon-Gabrion, 1988).

In both CTI and ABI instructional treatments, the teacher was provided with lesson plans that included directions for students, repeated listening experiences, and instructions for leading participatory activities in response to the musical examples described in the next section. Although many of the CTI lessons took more time than the corresponding ABI lessons, each of the sixteen lesson was presented in the context of one forty-five minute period. The teacher supplemented the instruction as necessary with note reading and recorder playing activities so that each treatment group received equal time spent on instruction. CTI and ABI lessons were organized in four groups of four lessons, and each group of lessons was based on one musical example. The researcher recorded each musical example in sections and as intact pieces on separate CD tracks to facilitate
playing specific sections of the pieces during the lessons. See Table 7 for a summary of
CD tracks, musical examples, and associated CTI and ABI lesson plans.

Table 7. CD Tracks for Musical Examples Used in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Title</th>
<th>Section(s)</th>
<th>Length</th>
<th>CD Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 4</td>
<td>&quot;Prelude&quot; from <em>Carmen</em></td>
<td>A₁ B A₂ C A₃</td>
<td>2:13</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A₁</td>
<td>0:31</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>0:18</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A₂</td>
<td>0:16</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0:49</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A₃</td>
<td>0:19</td>
<td>6</td>
</tr>
<tr>
<td>5-8</td>
<td>Arkansas Traveler/Sailor's</td>
<td>A</td>
<td>1:18</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>0:51</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0:55</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A B C</td>
<td>3:04</td>
<td>10</td>
</tr>
<tr>
<td>9-12</td>
<td>Pavane</td>
<td>A₁ B₁ A₂ B₂ Coda</td>
<td>3:55</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A₁</td>
<td>0:57</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B₁</td>
<td>0:57</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A₂</td>
<td>0:58</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B₂</td>
<td>0:43</td>
<td>15</td>
</tr>
</tbody>
</table>
Table 7 (continued). CD Tracks for Musical Examples Used in CTI and ABI Instructional Treatments.

<table>
<thead>
<tr>
<th>Lessons</th>
<th>Title</th>
<th>Section(s)</th>
<th>Length</th>
<th>CD Track</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-16</td>
<td>Back to Shalla-Bal</td>
<td>A B A’</td>
<td>3:06</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>0:57</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>0:47</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A’</td>
<td>1:22</td>
<td>20</td>
</tr>
</tbody>
</table>

Treatment I: CTI

General music instruction is typically criticized as consisting of only activities without a sufficient focus on learning (S. Stauffer, personal communication, April 22, 2003). Therefore, in addition to the three elements common to both CTI and ABI instructional treatments, CTI included questions asked by the teacher and other opportunities designed to encourage critical thinking about the music listening examples. Critical thinking instruction was limited to the CTI instructional treatment in the current study and was parallel to a listening sequence (cited in Campbell & Scott-Kassner, 2002) including repeated listenings, participation in activities, and answering questions asked by the teacher.

The definition of critical thinking in music for the current study was musical understanding through reflection and participation in a constructivist model of education. Students' musical understanding included: the mental processes of analyzing,
By asking critical thinking questions, the teacher was instructed to encourage subjects to seek multiple responses to problems instead of searching for one "correct" answer in the CTI lesson plans. The intention of the CTI instructional treatment was to have the subjects consider alternate solutions to the teacher's questions, to reflect on their listening experiences, and to discover affective understandings of the music. The purpose of CTI was to encourage critical thinking about the music listening examples. These purposes were consistent with developing critical thinking skills in music, including: comparison and contrast, pattern recognition, making connections, sequencing, developing criteria for judgment, and synthesis (Brophy, 2000). See Table 8 for specific examples of critical thinking questions asked by the teacher in CTI lesson plans and the associated critical thinking skill.
Table 8. Examples of Critical Thinking Questions in CTI Lessons.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Step</th>
<th>Critical Thinking Skill</th>
<th>Critical Thinking Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1a</td>
<td>Analysis</td>
<td>How would you describe the melody? How would you show it?</td>
</tr>
<tr>
<td>3</td>
<td>1a</td>
<td>Analysis</td>
<td>What did you notice about the loudness or volume of the music? When did some notes &quot;stand out&quot; of the music? Describe what you heard.</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>Comparison and Contrast</td>
<td>How did your map of the music compare with another student’s map?</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Comparison and Contrast</td>
<td>What was different about each of the instruments you heard? What was the same?</td>
</tr>
<tr>
<td>1</td>
<td>5a</td>
<td>Criteria for Judgment</td>
<td>How might you change your pattern? Why?</td>
</tr>
<tr>
<td>4</td>
<td>12a</td>
<td>Criteria for Judgment</td>
<td>How well does your map show the music?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>What grade would you give your own map?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Why? How could you improve it?</td>
</tr>
<tr>
<td>4</td>
<td>1a</td>
<td>Sequencing</td>
<td>How did the music change? How did you know it changed? Describe what you heard.</td>
</tr>
<tr>
<td>10</td>
<td>5a</td>
<td>Sequencing</td>
<td>How did the music change from phrase to phrase? How was the music organized or put together?</td>
</tr>
</tbody>
</table>
### Table 8 (continued). Examples of Critical Thinking Questions in CTI Lessons.

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Step</th>
<th>Critical Thinking Skill</th>
<th>Critical Thinking Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5a</td>
<td>Making Connections</td>
<td>How did the volume of this music change?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>How did you show that in your conducting?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>How did you show notes that “stood out” in the music in your conducting?</td>
</tr>
<tr>
<td>12</td>
<td>1a</td>
<td>Making Connections</td>
<td>What might this music be used for? Where might you hear this music? What do you imagine is happening when you hear this music?</td>
</tr>
<tr>
<td>5</td>
<td>1a</td>
<td>Pattern Recognition</td>
<td>How would you describe the beat of this music? What do you notice about the beat you hear?</td>
</tr>
<tr>
<td>9</td>
<td>1a</td>
<td>Pattern Recognition</td>
<td>What different kinds of rhythm did you hear? Describe the rhythms you heard.</td>
</tr>
<tr>
<td>1</td>
<td>5a</td>
<td>Evaluation</td>
<td>How well did your patterns fit with the steady beat you heard in the music?</td>
</tr>
<tr>
<td>12</td>
<td>12a</td>
<td>Evaluation</td>
<td>How well does your map show the music?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>What grade would you give your own map?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Why? How could you improve it?</td>
</tr>
</tbody>
</table>
As a corollary to the critical thinking questions asked by the teacher, the CTI treatment also included four types of opportunities for critical thinking. Specifically, the students were given opportunities to improvise their own body percussion and rhythm patterns, to create their own movements, to create their own listening maps, and to lead their peers in kinesthetic and instrumental activities. These additional opportunities for critical thinking provided CTI subjects with further experiences designed to develop their ability to synthesize musical information. The critical thinking questions and additional opportunities for critical thinking were the two key components distinguishing the two instructional treatments; these components were present in the CTI treatment and absent from the ABI treatment.

The researcher contacted twelve published experts in the field of music education and critical thinking to solicit their critiques of a portion of the sixteen CTI and ABI lesson plans. The experts were chosen on the basis of their contributions to reference books such as *The Handbook of Research on Music Learning and Teaching* (1992), *The New Handbook of Research on Music Teaching and Learning* (2002), and *The International Encyclopedia of Education* (1994), as well as on the basis of articles published in refereed journals such as *The Journal of Research in Music Education*, *The Bulletin of the Council for Research in Music Education*, *The Journal of Curriculum Studies*, and *Educational Theory*. Eight of the twelve experts contacted by the researcher agreed to provide written feedback concerning the lesson plans.

In general, the experts provided a mixed review of the lesson plans as written. Responses from experts ranged from minor changes to more substantial revisions.
result of the experts' critiques of the lessons, the researcher modified the questions asked by the teacher to be more focused and to reflect critical thinking more accurately. Some experts raised concerns about the research methodology of the current study and the limiting nature of the dependent variable; such feedback was noted and included in the limitations of the current study as described in Chapter 1. The researcher also detailed how the CTI lesson plans addressed each component of critical thinking; for a list of examples of critical thinking skills in CTI lessons, see Table 8 above. Other suggestions about teacher preparation curricula and alternate research paradigms offered by some experts fell outside of the scope of the current study and were therefore discounted.

CTI was designed to have the subjects experience, reflect, and share their thoughts about the music as they responded to the teacher's questions about the musical examples and participated in other opportunities for critical thinking such as improvising rhythm patterns, creating movements, and leading classroom activities. During repeated listening experiences, the subjects responded to the music by moving with props, creating musical maps, and playing classroom instruments. The subjects also provided verbal and written responses to teacher's questions in relation to the musical examples. For example, through direct observation and reviews of videotaped lessons, the researcher observed the teacher teaching the second CTI lesson on melodic motion and shape as directed in the CTI lesson plans. The teacher began the lesson by instructing the students to listen for the direction of the melody in the musical example. After playing the musical example once, the teacher asked the students:
• "How would you describe the melody?"
• "How would you show it?"

After soliciting and acknowledging four student responses, the teacher explained that the musical example has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same notes. She then demonstrated the shape of the melody using a flag. She distributed a flag to each student, played the recording of Bizet's "Prelude" from Carmen again, and directed the students to mirror her movements as she had previously demonstrated. She played the musical example again and directed the students to improvise their own motions using a flag to show the melodic contour. The teacher then asked the students:

• "How well did your motions show the melody?"
• "How did your motions compare with motions other students improvised?"
• "How might your change your motions? Why?"

The teacher then explained that the sometimes the melody goes up or "ascends," sometimes goes down or "descends," and sometimes repeats the same pitch. She also explained that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes. The teacher played the recording again and instructed the students to improvise their own motions to show how the melody moves up and down, by leap or by step, by moving with their flags. She then paused the recording and invited a student to lead the class by demonstrating his improvised movement patterns using a flag. She repeated the invitation for five more students. See Table 9 for a summary of the second CTI lesson plan, and Appendix C for
the complete CTI lesson plans. Each step in the lesson plans begins with a direction in bold type for ease of use by the teacher.

Table 9. Procedure for CTI Lesson 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Play the recording and tell students to listen for the direction of the melody.</td>
</tr>
<tr>
<td>1a</td>
<td>Ask the students: How would you describe the melody? How would you show it?</td>
</tr>
<tr>
<td>2</td>
<td>Tell the students that this music has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same note.</td>
</tr>
<tr>
<td>3</td>
<td>Demonstrate the shape of the melody by moving a flag.</td>
</tr>
<tr>
<td>4</td>
<td>Distribute a flag to each student, play the recording again, and have the students mirror your movements.</td>
</tr>
<tr>
<td>5</td>
<td>Play the recording again, have the students improvise their own motions using a flag to show the melodic contour.</td>
</tr>
<tr>
<td>5a</td>
<td>Ask the students: How well did your motions show the melody? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
</tr>
<tr>
<td>6</td>
<td>Tell students that melodies have lines and shapes that either go up or “ascend,” go down or “descend,” or repeat the same pitch. Explain that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes.</td>
</tr>
</tbody>
</table>
Table 9 (continued). Procedure for CTI Lesson 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td><strong>Play</strong> the recording again and have the students show how the melody moves up and down, and by leap or step with their flag. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>

In the CTI lesson above, the teacher used a combination of direct instruction, participatory activities, and opportunities for critical thinking to demonstrate and teach the musical concepts of melodic motion and shape. The students not only took part in classroom activities and used movement props, but they also answered higher-order questions about the musical example and had the opportunity to lead the class using their own improvised motions. The focus of the second CTI lesson was on doing the musical activities as well as of thinking about musical concepts. The CTI methodology was parallel to an approach advocated by Hagan (1971) who asserted that aural understanding results from thinking, not merely imitation. Hagan also advocated encouraging students to evaluate and judge the music for themselves, an essential component in CTI methodology. Additionally, instead of explaining and telling, CTI methodology employed questioning techniques as advocated by Taba (1966). Questioning strategies and other opportunities for critical thinking specified in CTI lessons incorporated higher-order thinking skills in addition to terms and activities related to musical concepts.

Concurrent validity for CTI lessons in the present study was provided by the formal and informal directed listening lessons contained in Regelski’s 1981 text *Teaching*
General Music. Similarly, Regelski directed teachers to create their own listening lessons using repeated listenings of the same music. He also offered advice to teachers concerning the preparation of students, the selection of musical examples, guidance during the lesson, and investigating students' responses, stating:

the teacher must (a) provide the cognitive readiness for listening lessons; (b) select compositions for listening lessons that contain appropriate kinds and quantities of attentive [most clearly perceived] qualities; (c) provide directions that steer the learner's attention to those attentive qualities; and for purposes of indicating that teacher perception was accurately or adequate, (d) attempt to make overt the student's otherwise covert responses. (p. 199)

Concurrent validity for the present study was also provided by similarities CTI shared with "Thinking in Music" (Taetle, 2002), a critical thinking approach to music listening developed in collaboration with the Tucson Symphony Orchestra. Additionally, both CTI and ABI lessons shared similarities with the six-point "Listening Sequence" adapted from Stauffer's work:

Step 1: Prepare
It is very important to give children something specific to listen for and a way to show that they hear it.

Step 2: Listen
Play the recording, and check students' perception or feelings through class discussion.

Step 3: Activate and Participate
Listen again, while actively involving students in performing or moving in some way to the music. These exercises can be repeated more than once and over time.
Step 4: Question and Discuss
Discussion should take place throughout this sequence, and can address the music, portions of the music, the activities the children are doing, or their emotional response to the experiences or the music.

Step 5: Listen Again
Listen to the recording quietly, simply to notice familiar moments, expand insight into the music, and reestablish the work as a whole.

Step 6: Extend the Listening
Use this listening as a stimulus to have the children... listen to other music... that has similar or contrasting characteristics (pp. 195-196, cited in Campbell & Scott-Kassner, 2002).

In CTI lessons, the teacher had the subjects listen repeatedly to the musical examples, conducted interactive activities, invited students to lead the class, and led open-ended discussions based on scripted questions. In addition to the knowledge and comprehension-level activities, subjects in CTI lessons were instructed to apply their understanding of musical concepts to unfamiliar musical examples, to analyze component parts of the musical examples, to synthesize their own representations of the musical examples, and to evaluate the process of synthesis in their own and other students’ work. Critical thinking involved examining information, making judgments, arriving at decisions, defining problems, considering alternatives, and developing reasons (Morris, 1996) in relation to musical concepts and listening examples. In addition, the teacher questioned the students’ reasoning by asking follow-up questions to clarify the thought processes in CTI lessons (Norris, 1985).

In the second instructional treatment, however, the instruction was limited to learning musical vocabulary at the knowledge level, and demonstrating that
understanding through a series of rote activities in response to the music listening examples. Activity-Based Instruction (ABI), described below, differed from CTI in only one aspect; there were no higher-order questions or opportunities for critical thinking provided by the teacher in the ABI lesson design.

Treatment II: ABI

Three elements comprised the second instructional treatment, Activity-Based Instruction (ABI), in the current study: instruction in musical terms and concepts, repeated listening to musical examples, and rote activities in response to the listening examples. The musical material, responding activities, and classroom time spent on instruction in the ABI lessons were identical to that contained in the CTI lessons; the ABI lessons, however, did not include any opportunities for critical thinking as specified in the first treatment.

For example, through direct observation and reviews of videotaped lessons, the researcher observed the teacher teaching the second ABI lesson on melodic motion and shape as directed in the ABI lesson plans. The teacher began the lesson by instructing the students to listen for the direction of the melody in the musical example. After playing the musical example once, the teacher explained that the music has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same notes. She then demonstrated the shape of the melody using a flag. She distributed a flag to each student, played the recording of Bizet's "Prelude" from Carmen again, and directed the students to mirror her movements as she had previously demonstrated. The teacher
played the recording again and used her other hand to show the melodic contour and directed the students to mirror her motions as before. The teacher then explained that sometimes the melody goes up or "ascends," sometimes goes down or "descends," and sometimes repeats the same pitch. She also explained that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes. The teacher played the recording again and instructed the students to mirror her motions with a flag to show how the melody ascends and descends by leap and by step, or repeats the same notes. She directed the students to mirror her movements as before. Although the ABI treatment contained the same type of responding activities as the CTI treatment (i.e. moving with props, playing instruments, and mapping the music), there were no opportunities provided for the ABI subjects to create, improvise, or lead classroom activities. See Table 10 for a summary of the second ABI lesson plan, and Appendix C for the complete ABI lesson plans. Each step in the lesson plans begins with a direction in bold type for ease of use by the teacher.

Table 10. Procedure for ABI Lesson 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity-Based Instruction (ABI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Play</strong> the recording and tell students to listen for the direction of the melody.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Tell</strong> the students that this music has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same note.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Demonstrate</strong> the shape of the melody by moving a flag.</td>
</tr>
</tbody>
</table>
Table 10 (continued). Procedure for ABI Lesson 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Activity-Based Instruction (ABI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><strong>Distribute</strong> a flag to each student, play the recording again, and have the students mirror your movements.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Play</strong> the recording again, use the other hand to show the melodic contour, and have the students mirror your movements.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Tell</strong> students that melodies have lines and shapes that either go up or “ascend,” go down or “descend,” or repeat the same pitch. Explain that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Play</strong> the recording again and have the students mirror your motions as you show how the melody moves up and down, and by leap or step using a flag.</td>
</tr>
</tbody>
</table>

In the second ABI lesson above, the teacher used direct instruction and participatory activities to demonstrate and teach the musical concepts melodic line and shape. No effort was made to question the students, to invite them to lead classroom activities, to improvise their own rhythm patterns, to create their own movements, or to draw their own musical maps. The focus of the lesson was on learning the terms and participating in activities in response to the music listening examples instead of thinking about the related musical concepts.
Design

The current study had a randomized pretest-posttest, repeated measure design with a covariate. This design limited the effects of questioning strategies and other opportunities for critical thinking to the first experimental group, CTI. In contrast, parallel instruction was provided to the second experimental group, ABI. Employing and CTI treatments in two separate groups of subjects provided a comparison of these instructional methodologies. It was determined that no control group was necessary for the current study; a control group of subjects without any listening instruction would be predisposed for failure. Before the beginning of the current study, two classes of subjects were randomly assigned to each instructional group. Gordon's Musical Aptitude Profile (1967/1995), which served as the covariate in the current study, was administered to all subjects before CTI and ABI instruction began. Both instructional treatments were administered concurrently by the teacher to the randomly-assigned classes on four days per week during a period of four weeks. The researcher-designed measure, “Listening and Thinking,” was used as both the pretest (O₁) and posttest (O₂) for the current study. See Table 11 below for a summary of the research design.
Table 11. Summary of the Quasi-Experimental Design.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Class</th>
<th>Group</th>
<th>Covariate</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Random 1</td>
<td>1</td>
<td>CTI</td>
<td>C</td>
<td>O₁</td>
<td>CTI</td>
<td>O₂</td>
</tr>
<tr>
<td>Random 2</td>
<td>2</td>
<td>ABI</td>
<td>C</td>
<td>O₁</td>
<td>ABI</td>
<td>O₂</td>
</tr>
<tr>
<td>Random 3</td>
<td>3</td>
<td>ABI</td>
<td>C</td>
<td>O₁</td>
<td>ABI</td>
<td>O₂</td>
</tr>
<tr>
<td>Random 4</td>
<td>4</td>
<td>CTI</td>
<td>C</td>
<td>O₁</td>
<td>CTI</td>
<td>O₂</td>
</tr>
</tbody>
</table>

The quasi-experimental design controlled for the effect of testing by having one pretest and one posttest administration of the “Listening and Thinking” measure to each subject. The effect of history was controlled for by using a concurrent time period of instruction for both treatment groups. Similarly, the effect of maturation was controlled for by using subjects from the same grade level during the same time period of the school year. Finally, a covariate was used to control for effects that subjects’ musical aptitude may have had on their response scores.

To control for additional threats to validity, the researcher randomly videotaped nineteen CTI and ABI classes throughout the course of the study. As an additional check for validity between the written and observed CTI and ABI treatments, three independent judges reviewed a stratified random sample of five CTI and five ABI lessons presented in a random order to determine whether all aspects of the lesson plans were adequately presented in the videotaped lessons they viewed. The judges were given a DVD-ROM containing video footage of the lessons and asked to determine if the content of the lessons viewed matched that of the corresponding written lesson plans. The judges
reported that an average of 93% and 100% of the observable objectives contained in the written CTI and ABI lesson plans were observed, respectively, indicating a high level of agreement between the written lesson plans and the observed instructional objectives. A Pearson’s Product-Moment correlation coefficient and Fisher Z transformation were used to determine the interscore reliability \((r = 0.97)\) among the judges’ scores. Because the students’ normal classroom setting was used, artificiality of the study was reduced. The only departures from normal classroom procedures the subjects experienced were the administration of the covariate, pretest, and posttest at the beginning and conclusion of the study. Content validity was also supported by lesson plan and evaluation consultations with published experts in the field of music education and critical thinking, as described earlier in this chapter.

**Procedures**

The teacher presenting both CTI and ABI groups was the subjects’ regular music teacher and an expert music educator in her second year at the dissertation site with eleven years of teaching experience. She earned her Master’s degree in Music Education from the University of Illinois at Champaign-Urbana and held public-school certification to teach music in kindergarten through high school. She was trained in both treatment methodologies by the researcher prior to beginning the experimental period. The researcher secured enough materials to instruct the experimental groups, including markers, paper, tennis balls, flags, CD recordings, and lesson plans. After preparing the
lesson plans, the teacher presented the responding activities for the researcher to insure compliance with CTI and ABI lesson plans as written.

CTI and ABI lesson plans consisted of sixteen (16) half-hour sessions divided into four segments. One different musical example was used in each of the four segments. During this study, each CTI and ABI lesson plan was included in the context of a forty-five minute music class four days per week over the course of four weeks.

Prior to beginning the study, the researcher trained the teacher to administer the "Listening and Thinking" measure as a pretest and a posttest. The teacher was given printed directions and demonstrated compliance with proper test administration for the researcher. See Appendix B for a copy of the test administration directions for "Listening and Thinking." All the subjects completed "Listening and Thinking" as a pretest before the beginning of the instructional period. Using the published instructions, the researcher also trained the teacher to administer the Musical Aptitude Profile (Gordon, 1967/1995), and she administered the profile to all subjects prior to the instructional period. During the course of the instruction, the teacher taught all the subjects as members of four intact classes; each instructional methodology (CTI and ABI) was taught to two classes each. The four-week instructional period began in April, 2003. Immediately following the instructional period, each subject was administered the "Listening and Thinking" measure as a posttest in May, 2003.
Analysis

Analysis of data was completed using a two-way multivariate analysis of covariance (MANCOVA) with repeated measures. Dependent variables were the musical term, affective, associative, and total response scores on the “Listening and Thinking” measure. The subjects’ responses on the “Listening and Thinking” measure were randomly ordered and scored by three independent judges. A Pearson’s Product-Moment correlation coefficient and Fisher Z transformation were used to determine the interscore reliability ($r = 0.92$) among the judges’ scores. Additionally, the subjects’ scores on the Musical Aptitude Profile (Gordon, 1967/1995) were used as a covariate.

Using instructional treatment (CTI and ABI) and test (pretest and posttest) as the two independent variables, the data were analyzed to determine if any significant main effect differences existed within subjects’ scores by test and to determine if any significant main effect differences existed between subjects’ scores by instructional treatment. The data were also analyzed to determine if any significant interaction effect differences existed between subjects’ scores by treatment by test.

Time Table

The time table for this study included a total of seven weeks. Prior to the four weeks of instruction, there was one week of training and pre-testing. Following the instructional period, there were two weeks for post-testing and analysis.
Summary

In this study, the effect of Critical Thinking Instruction (CTI) on fifth-grade students' verbal descriptions of music was measured. A pretest and posttest design was used to investigate the statistical significance of CTI treatment on subjects' music listening skills. Because the instruction was administered to subjects in intact classes, the Musical Aptitude Profile (Gordon, 1967/1995) was used as a covariate in order to account for possible effects of musical aptitude on subjects' written response scores.

Analysis of data was completed with a two-way multivariate analysis of covariance (MANCOVA) with repeated measures. Independent variables were the instructional treatments (CTI and ABI) and test (pretest and posttest). Dependent variables were the musical term, affective, associative, and total response scores on the “Listening and Thinking” measure. Using instructional treatment and test as the two independent variables, the data were analyzed to determine if any significant main effect differences existed within subjects' scores by test, and to determine if any significant main effect differences existed between subjects' response scores by instructional treatment. The data were also analyzed to determine if any significant interaction effect differences existed between subjects' scores by treatment by test.
CHAPTER FOUR: DATA ANALYSIS

Order of Presentation

The four null hypotheses stated in chapter one are restated in this chapter, followed by a report of the statistical findings relevant to each null hypothesis. For each response score, the three judges reported whole numbers. An average of the three judges' scores was used in the following statistical analyses and therefore may contain decimal values. A summary of the findings related to the four null hypotheses follows the statistical results. Additional analyses and a summary of related findings are presented to conclude this chapter.

Restatement of Null Hypotheses

Four null hypotheses, inherent in the research questions, were stated in chapter one:

• Ho 1: In analyses of covariance, there are no significant \( p \leq 0.05 \) main effect differences on subjects' (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores with subjects' scores on the *Musical Aptitude Profile* (Gordon, 1967/1995).

• Ho 2: There are no significant \( p \leq 0.05 \) main effect (between group) differences by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects': (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.
• Ho 3: There are no significant ($p \leq 0.05$) main effect (within group) differences by test (pretest and posttest) on subjects' (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.

• Ho 4: There are no significant ($p \leq 0.05$) interaction effect differences by test (pretest and posttest) by treatment (Critical Thinking Instruction and Activity-Based Instruction) on subjects' (a) musical term response scores, (b) affective response scores, (c) associative response scores, or (d) total response scores.

Regarding the first null hypothesis, in two-way multivariate analyses of covariance (MANCOVAs) with repeated measures and analyzing subjects' musical aptitude scores as a covariate, no statistically significant differences were found in subjects' response scores. The first null hypothesis was therefore not rejected, indicating subjects' musical aptitude had no significant effect on musical term, affective, associative, or total response scores. Although subjects' musical aptitude scores differed by group and by class, in two additional analyses of variance (ANOVAs), it was determined that those differences were not statistically significant. Therefore, there were statistically equivalent musical aptitude scores in each group of subjects (CTI and ABI) and each class of subjects. See Tables 12 and 13 for mean, adjusted mean, and $p$ values, and Tables 14 and 15 for specific mean and standard deviation values.
Table 12. CTI Mean and Adjusted Mean Response Scores, and $p$ Values.

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest Adjusted Mean</th>
<th>Posttest Mean</th>
<th>Posttest Adjusted Mean</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.63</td>
<td>16.37</td>
<td>26.45</td>
<td>26.18</td>
<td>NS</td>
</tr>
<tr>
<td>Affective</td>
<td>2.62</td>
<td>2.56</td>
<td>4.57</td>
<td>4.51</td>
<td>NS</td>
</tr>
<tr>
<td>Associative</td>
<td>3.75</td>
<td>3.68</td>
<td>6.72</td>
<td>6.66</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>23.00</td>
<td>22.61</td>
<td>37.74</td>
<td>37.35</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 13. ABI Mean and Adjusted Mean Response Scores, and $p$ Values.

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest Adjusted Mean</th>
<th>Posttest Mean</th>
<th>Posttest Adjusted Mean</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.03</td>
<td>16.30</td>
<td>14.34</td>
<td>14.61</td>
<td>NS</td>
</tr>
<tr>
<td>Affective</td>
<td>1.73</td>
<td>1.79</td>
<td>2.60</td>
<td>2.66</td>
<td>NS</td>
</tr>
<tr>
<td>Associative</td>
<td>2.78</td>
<td>2.84</td>
<td>2.26</td>
<td>2.32</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>20.54</td>
<td>20.93</td>
<td>19.20</td>
<td>19.59</td>
<td>NS</td>
</tr>
</tbody>
</table>

Table 14. Mean, Standard Deviation, and $p$ Values of Musical Aptitude Scores by Treatment Group.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean</th>
<th>SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTI</td>
<td>105.7</td>
<td>12.48</td>
<td>NS</td>
</tr>
<tr>
<td>ABI</td>
<td>100.1</td>
<td>14.59</td>
<td></td>
</tr>
</tbody>
</table>
Table 15. Mean, Standard Deviation, and $p$ Values of Musical Aptitude Scores by Class.

<table>
<thead>
<tr>
<th>Class</th>
<th>Mean</th>
<th>SD</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102.8</td>
<td>13.22</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>97.7</td>
<td>16.28</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>102.2</td>
<td>12.90</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>108.8</td>
<td>11.13</td>
<td></td>
</tr>
</tbody>
</table>

Regarding the second null hypothesis, statistically significant differences were found in subjects' musical term, affective, associative, and total response scores by treatment in favor of CTI subjects. In a one-way multivariate analysis of covariance (MANCOVA), the resulting $p$ values were 0.001, 0.016, 0.001, and 0.001, respectively. The second null hypothesis was therefore rejected, indicating CTI subjects' musical term, affective, associative, and total response scores were significantly higher than ABI subjects' scores. See Table 16 for mean, standard deviation, and $p$ values.

Table 16. Mean, Standard Deviation, and $p$ Values by Treatment.

<table>
<thead>
<tr>
<th>Score</th>
<th>CTI Mean</th>
<th>CTI SD</th>
<th>ABI Mean</th>
<th>ABI SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>21.28</td>
<td>11.35</td>
<td>15.45</td>
<td>6.26</td>
<td>0.001</td>
</tr>
<tr>
<td>Affective</td>
<td>3.53</td>
<td>4.07</td>
<td>2.23</td>
<td>2.36</td>
<td>0.016</td>
</tr>
<tr>
<td>Associative</td>
<td>5.17</td>
<td>5.07</td>
<td>2.58</td>
<td>2.06</td>
<td>0.001</td>
</tr>
<tr>
<td>Total</td>
<td>29.98</td>
<td>17.86</td>
<td>20.26</td>
<td>8.06</td>
<td>0.001</td>
</tr>
</tbody>
</table>
Regarding the third null hypothesis, statistically significant differences were found in subjects' musical term, affective, associative, and total verbal response scores by test; in a one-way multivariate analysis of covariance (MANCOVA) with repeated measures, the resulting $p$ values were: 0.006, 0.007, 0.050, and 0.003, respectively. The third null hypothesis was therefore rejected, indicating subjects' musical term, affective, associative, and total response posttest scores were significantly higher than subjects' pretest scores. See Table 17 for mean, standard deviation, and $p$ values.

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.34</td>
<td>6.52</td>
<td>20.47</td>
<td>11.76</td>
<td>0.006</td>
</tr>
<tr>
<td>Affective</td>
<td>2.18</td>
<td>2.29</td>
<td>3.60</td>
<td>4.13</td>
<td>0.007</td>
</tr>
<tr>
<td>Associative</td>
<td>3.27</td>
<td>2.26</td>
<td>4.52</td>
<td>5.30</td>
<td>0.050</td>
</tr>
<tr>
<td>Total</td>
<td>21.78</td>
<td>8.37</td>
<td>28.58</td>
<td>18.70</td>
<td>0.003</td>
</tr>
</tbody>
</table>

In a post-hoc analysis, subjects' musical term, affective, associative, and total response scores were also analyzed by test with two additional one-way multivariate analyses of covariance (MANCOVAs) with repeated measures. Significant differences were found in CTI subjects' musical term, affective, associative, and total verbal response scores by test; the resulting $p$ values were: 0.001, 0.0029, 0.007, and 0.001, respectively. Significant differences by test indicated that CTI subjects' musical term, affective, associative, and total response posttest scores were significantly higher than CTI
subjects' pretest scores. No significant difference was found in ABI subjects' musical term, affective, associative, and total verbal response scores by test. ABI subjects did not demonstrate a significant increase or decrease in response scores from pretest to posttest. See Tables 18 and 19 for associated mean, standard deviation, and $p$ values.

Table 18. CTI Mean, Standard Deviation, and $p$ Values by Test

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.63</td>
<td>7.08</td>
<td>26.45</td>
<td>12.71</td>
<td>0.001</td>
</tr>
<tr>
<td>Affective</td>
<td>2.62</td>
<td>2.69</td>
<td>4.57</td>
<td>4.94</td>
<td>0.029</td>
</tr>
<tr>
<td>Associative</td>
<td>3.75</td>
<td>2.47</td>
<td>6.72</td>
<td>6.43</td>
<td>0.007</td>
</tr>
<tr>
<td>Total</td>
<td>23.00</td>
<td>9.17</td>
<td>37.74</td>
<td>21.23</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Table 19. ABI Mean, Standard Deviation, and $p$ Values by Test

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.03</td>
<td>5.96</td>
<td>14.34</td>
<td>6.49</td>
<td>NS</td>
</tr>
<tr>
<td>Affective</td>
<td>1.73</td>
<td>1.70</td>
<td>2.60</td>
<td>2.83</td>
<td>NS</td>
</tr>
<tr>
<td>Associative</td>
<td>2.78</td>
<td>1.92</td>
<td>2.26</td>
<td>2.18</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>20.54</td>
<td>7.38</td>
<td>19.20</td>
<td>8.73</td>
<td>NS</td>
</tr>
</tbody>
</table>

To investigate existing differences in pretest scores by instructional treatment, a separate multivariate two-way analysis of covariance (MANCOVA) was performed. There were
no statistically significant differences found in pretest response scores by treatment
group. See Table 20 for a summary of mean, standard deviation, and $p$ values.

Table 20. Pretest Mean, Standard Deviation, and $p$ Values by Treatment.

<table>
<thead>
<tr>
<th>Score</th>
<th>CTI Mean</th>
<th>CTI SD</th>
<th>ABI Mean</th>
<th>ABI SD</th>
<th>$p$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.34</td>
<td>7.08</td>
<td>16.03</td>
<td>5.96</td>
<td>NS</td>
</tr>
<tr>
<td>Affective</td>
<td>2.62</td>
<td>2.69</td>
<td>1.73</td>
<td>1.70</td>
<td>NS</td>
</tr>
<tr>
<td>Associative</td>
<td>3.75</td>
<td>2.47</td>
<td>2.78</td>
<td>1.92</td>
<td>NS</td>
</tr>
<tr>
<td>Total</td>
<td>23.00</td>
<td>9.17</td>
<td>20.54</td>
<td>7.38</td>
<td>NS</td>
</tr>
</tbody>
</table>

Regarding the fourth null hypothesis, statistically significant interaction effects
were found in subjects’ musical term, associative, and total response scores by test by
treatment; in a two-way multivariate analysis of covariance (MANCOVA) with repeated
measures, the resulting $p$ values were 0.001, 0.004, and 0.001, respectively. The fourth
null hypothesis was therefore rejected, indicating that CTI subjects’ musical term,
associative, and total response scores were significantly higher than corresponding ABI
subjects’ scores by test. These significant interaction effects are more fully explored in a
discussion of findings in chapter five. For mean and standard deviation statistics by test
and by treatment, see Tables 21 and 22, respectively. See Table 23 for the $p$ value results,
and Figures 1 - 3 for a display of the significant interaction effects.
Table 21. CTI Mean and Standard Deviation Values by Test.

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.63</td>
<td>7.08</td>
<td>26.45</td>
<td>12.71</td>
</tr>
<tr>
<td>Affective</td>
<td>2.62</td>
<td>2.69</td>
<td>4.57</td>
<td>4.94</td>
</tr>
<tr>
<td>Associative</td>
<td>3.75</td>
<td>2.47</td>
<td>6.72</td>
<td>6.43</td>
</tr>
<tr>
<td>Total</td>
<td>23.00</td>
<td>9.17</td>
<td>37.73</td>
<td>21.23</td>
</tr>
</tbody>
</table>

Table 22. ABI Mean and Standard Deviation Values by Test.

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>16.03</td>
<td>5.96</td>
<td>14.34</td>
<td>6.49</td>
</tr>
<tr>
<td>Affective</td>
<td>1.73</td>
<td>1.70</td>
<td>2.60</td>
<td>2.83</td>
</tr>
<tr>
<td>Associative</td>
<td>2.78</td>
<td>1.92</td>
<td>2.26</td>
<td>2.18</td>
</tr>
<tr>
<td>Total</td>
<td>20.54</td>
<td>7.38</td>
<td>19.20</td>
<td>8.73</td>
</tr>
</tbody>
</table>

Table 23. *p* Values by Test by Treatment.

<table>
<thead>
<tr>
<th>Score</th>
<th><em>p</em> value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>0.001</td>
</tr>
<tr>
<td>Affective</td>
<td>NS</td>
</tr>
<tr>
<td>Associative</td>
<td>0.004</td>
</tr>
<tr>
<td>Total</td>
<td>0.001</td>
</tr>
</tbody>
</table>
The disordinal interaction effect by test by treatment shown above in Figure 1 indicates the statistically significant increase in musical term response scores from pretest to posttest demonstrated by the CTI group. A slight decrease in musical term response scores from pretest to posttest demonstrated by the ABI group is also displayed in Figure 1.
Figure 2. Associative Term Response Scores by Test by Treatment.

The disordinal interaction effect by test by treatment shown above in Figure 2 indicates the statistically significant increase in associative term response scores from pretest to posttest demonstrated by the CTI group. A slight decrease in associative term response scores from pretest to posttest demonstrated by the ABI group is also displayed in Figure 2.
The disordinal interaction effect by test by treatment shown above in Figure 3 indicates a statistically significant increase in total response scores from pretest to posttest demonstrated by the CTI group. A slight decrease in total response scores from pretest to posttest demonstrated by the ABI group is also displayed in Figure 3.
To describe subjects' responses in greater detail, range, minimum, maximum, and median data were calculated in further analyses by test and by treatment. See Tables 24 and 25 for a summary of CTI scores, and Tables 26 and 27 for ABI scores. Additionally, comparisons by test by treatment of median values, the most reliable measures of central tendency in open-ended distributions (Tate, 1965), are displayed in Figures 4 - 7.

Table 24. Range, Maximum, Minimum, and Median CTI Pretest Scores.

<table>
<thead>
<tr>
<th>Score</th>
<th>Range</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>31.66</td>
<td>32.33</td>
<td>0.67</td>
<td>15.67</td>
</tr>
<tr>
<td>Affective</td>
<td>11.33</td>
<td>11.33</td>
<td>0</td>
<td>2.33</td>
</tr>
<tr>
<td>Associative</td>
<td>12.67</td>
<td>13.00</td>
<td>0.33</td>
<td>3.33</td>
</tr>
<tr>
<td>Total</td>
<td>43.00</td>
<td>42.00</td>
<td>1.00</td>
<td>22.01</td>
</tr>
</tbody>
</table>

Table 25. Range, Maximum, Minimum, and Median CTI Posttest Scores.

<table>
<thead>
<tr>
<th>Score</th>
<th>Range</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>64.67</td>
<td>69.67</td>
<td>5.00</td>
<td>25.00</td>
</tr>
<tr>
<td>Affective</td>
<td>24.67</td>
<td>24.67</td>
<td>0</td>
<td>3.33</td>
</tr>
<tr>
<td>Associative</td>
<td>33.34</td>
<td>33.67</td>
<td>0.33</td>
<td>5.33</td>
</tr>
<tr>
<td>Total</td>
<td>117.68</td>
<td>128.01</td>
<td>10.33</td>
<td>36.66</td>
</tr>
</tbody>
</table>
Table 26. Range, Maximum, Minimum, and Median ABI Pretest Scores.

<table>
<thead>
<tr>
<th>Score</th>
<th>Range</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>21.00</td>
<td>26.33</td>
<td>5.33</td>
<td>15.67</td>
</tr>
<tr>
<td>Affective</td>
<td>7.33</td>
<td>7.33</td>
<td>0</td>
<td>1.67</td>
</tr>
<tr>
<td>Associative</td>
<td>8.67</td>
<td>8.67</td>
<td>0</td>
<td>2.50</td>
</tr>
<tr>
<td>Total</td>
<td>34.01</td>
<td>41.67</td>
<td>7.66</td>
<td>20.50</td>
</tr>
</tbody>
</table>

Table 27. Range, Maximum, Minimum, and Median ABI Posttest Scores.

<table>
<thead>
<tr>
<th>Score</th>
<th>Range</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>30.00</td>
<td>30.00</td>
<td>0</td>
<td>14.33</td>
</tr>
<tr>
<td>Affective</td>
<td>9.33</td>
<td>9.33</td>
<td>0</td>
<td>1.50</td>
</tr>
<tr>
<td>Associative</td>
<td>9.33</td>
<td>9.33</td>
<td>0</td>
<td>1.50</td>
</tr>
<tr>
<td>Total</td>
<td>47.00</td>
<td>48.33</td>
<td>1.33</td>
<td>18.67</td>
</tr>
</tbody>
</table>
The above comparison illustrates the change in median musical term response scores from pretest to posttest by treatment group. The above display indicates that while both treatments groups had the same pretest median scores, the CTI group demonstrated an increased median musical term response score on the posttest while the ABI group demonstrated a decreased median musical term response score.
The above comparison illustrates the change in median affective response scores from pretest to posttest by treatment group. While the CTI group demonstrated an increase in median affective response scores, the ABI group demonstrated a decrease in median affective response scores.
The above comparison illustrates the change in median associative response scores from pretest to posttest by treatment group. While the CTI group demonstrated an increase in median associative response scores, the ABI group demonstrated a decrease in median associative response score.
The above comparison illustrates the change in median total response scores from pretest to posttest by treatment group. While the CTI group demonstrated an increase in median total response score, the ABI group demonstrated a decrease in median total response score.
Additional Analyses

In two further analyses, differences among the types of written responses (musical term, affective, and associative) and the distributions of subjects’ posttest response were investigated. These analyses were undertaken to investigate agreement with existing research and to explore the posttest data associated with each response score and treatment group more completely.

Subjects’ verbal response scores were investigated to determine if there were statistically significant differences by response type (musical term, affective, and associative). In a one-way analysis of covariance (ANCOVA) using the Musical Aptitude Profile (Gordon, 1967/1995) scores as a covariate, a significant main effect difference ($p = 0.001$) was found among the subjects’ response scores, indicating a significantly greater number of musical term responses as compared to affective and associative term responses. See Table 28 for specific mean and standard deviation values. A post-hoc analysis was performed using a Sheffé test. Significant differences were found between the musical term and the affective responses ($p = 0.001$), and between the musical term and associative responses ($p = 0.001$), indicating that subjects used significantly more musical terms than affective or associative terms, and approximately the same number of affective and associative terms to describe the musical examples.
Table 28. Mean and Standard Deviation Values of Response Scores by Type.

<table>
<thead>
<tr>
<th>Score</th>
<th>Means</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musical Term</td>
<td>18.40</td>
<td>9.70</td>
</tr>
<tr>
<td>Affective</td>
<td>2.89</td>
<td>3.40</td>
</tr>
<tr>
<td>Associative</td>
<td>3.90</td>
<td>4.11</td>
</tr>
</tbody>
</table>

Four CTI and four ABI frequency distributions were performed to investigate the posttest data associated with each response score. Frequency distributions of posttest scores by instructional treatment were performed using the respective standard deviations and response scores. The skewness, a measure of a distribution’s deviation from symmetry, and kurtosis, a measure of a distribution’s inclusion of outliers (Tate, 1965), were calculated to determine each distribution’s deviation from a normal curve. All frequency distributions were positively skewed, indicating the bulk of subjects scored at the lower end of the distributions while a smaller number of subjects scored at the higher end of the distributions. Two of the four ABI frequency distributions approximated a normal curve, indicating the presence of a normal distribution, while one ABI distribution contained one large peak and two smaller peaks of scores, indicating a deviation from a normal distribution. Additionally, kurtosis values of the CTI distributions were greater than those of the ABI distributions, indicating a greater probability of outliers being included in the CTI distributions as compared to the ABI distributions. See Table 29 for a summary of skewness and kurtosis values for the ABI and CTI frequency distributions.
by response scores. See Figures 8 - 15 for CTI and ABI posttest frequency distributions by response type.

Table 29. Skewness and Kurtosis Values of Frequency Distributions by Treatment and Response Scores.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Score</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTI</td>
<td>Musical Term</td>
<td>0.92</td>
<td>2.08</td>
</tr>
<tr>
<td></td>
<td>Affective</td>
<td>2.16</td>
<td>6.09</td>
</tr>
<tr>
<td></td>
<td>Associative</td>
<td>2.55</td>
<td>8.00</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2.09</td>
<td>7.41</td>
</tr>
<tr>
<td>ABI</td>
<td>Musical Term</td>
<td>0.38</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Affective</td>
<td>1.04</td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td>Associative</td>
<td>1.76</td>
<td>4.03</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>0.77</td>
<td>2.04</td>
</tr>
</tbody>
</table>
As shown above, the frequency distribution of CTI musical term posttest scores was positively skewed. While the majority of the CTI subjects scored between $z = -3$ and +1 as illustrated in Figure 8, four above-average scores between $z = +1$ and +4 resulted in a skewness of 0.92 and a kurtosis of 2.08.
The frequency distribution of CTI affective posttest scores was positively skewed. While the majority of the CTI subjects scored between $z = -2$ and +1 as illustrated in Figure 9, five above-average scores between $z = +1$ and +4 resulted in a skewness of 2.16, and a kurtosis of 6.09.
The frequency distribution of CTI associative posttest scores was positively skewed. While the majority of the CTI subjects scored between $z = -2$ and $+1$ as illustrated in Figure 10, five above-average scores between $z = +1$ and $+4$ resulted in a skewness of 2.55, and a kurtosis of 8.00.
The frequency distribution of CTI total response posttest scores was positively skewed. While the majority of the CTI subjects scored between $z = -3$ and 1 as illustrated in Figure 11, five above-average scores between $z = +1$ and +5 resulted in a skewness of 2.09, and a kurtosis of 7.41.
The frequency distribution of ABI musical term response posttest scores approximated a normal curve, but was positively skewed. As illustrated in Figure 12, two above-average scores at $z = +2$ resulted in a skewness of 0.38, and a kurtosis of 0.01.
The frequency distribution of ABI affective response posttest scores was positively skewed. While the majority of the ABI subjects scored between $z = -1$ and $+1$ as illustrated in Figure 13, nine above-average scores between $z = +2$ and $+4$ resulted in a skewness of 1.04, and a kurtosis of $-0.18$. 
The frequency distribution of ABI associative response posttest scores was positively skewed and contained one large peak and two smaller peaks of scores. While the majority of the ABI subjects scored between $z = -2$ and 0 as illustrated in Figure 14, seven and six ABI students scored at $z = -3$ and +1, respectively, resulting in a skewness of 1.76, and a kurtosis of 4.03.
The frequency distribution of ABI total response posttest scores approximated a normal curve, but was positively skewed. While the majority of the ABI subjects scored between $z = -3$ and $+1$ as illustrated in Figure 15, one above-average score at $z = +3$ resulted in a skewness of 0.77, and a kurtosis of 2.04.
Summary of Findings

The above analyses were completed with one and two-way multivariate analyses of covariance (MANCOVAs) with repeated measures. Independent variables were the instructional treatment (CTI and ABI) and test (pretest and posttest). Dependent variables were musical term, affective, associative, and total response scores on the "Listening and Thinking" measure. In summary, seven findings of the current investigation were:

1. significant disordinal interaction effect differences in subjects’ response scores by test and by treatment were found, such that CTI subjects demonstrated greater gains in musical term, associative, and total response scores from pretest to posttest than ABI subjects.

2. significant main effect differences in subjects’ response scores by test were found, such that subjects demonstrated higher musical term, affective, associative, and total response scores on the posttest as compared to the pretest.

3. significant main effect differences in CTI subjects’ response scores by test were found, such that CTI subjects demonstrated higher musical term, affective, associative, and total response scores on the posttest as compared to the pretest.

4. significant main effect differences in subjects’ response scores by treatment were found, such that CTI subjects demonstrated higher musical term, affective, associative, and total response scores than ABI subjects.

5. the effect of musical aptitude as a covariate on subjects’ musical term, affective, associative, and total response scores was found not to be significant.
6. significant differences were found among subjects’ musical term, affective, associative, and total response scores, such that subjects demonstrated significantly higher musical term response scores than affective response scores, and than associative response scores.

7. frequency distributions of subjects’ posttest scores by treatment group and response score were calculated and found to be positively skewed, indicating the presence of scores higher than expected in normal distributions.
CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

Restatement of Purpose

The purpose of this study was to determine the effect of instruction that included opportunities for critical thinking during music listening on the written responses to listening examples of fifth-grade students. Four research questions were constructed to determine:

1. if music aptitude, as measured by the Musical Aptitude Profile (Gordon, 1967/1995), has a significant effect on subjects’ musical term, affective, associative, and total response scores;
2. if there are significant between group differences in subjects’ musical term, affective, associative, and total response scores by instructional treatment;
3. if there are significant within group differences in subjects’ musical term, affective, associative, and total response scores by test;
4. if there are significant interaction effects by test and by instructional treatment on subjects’ musical term, affective, associative, and total response scores.

Discussion

Music listening is a meaningful activity for people throughout the world. The primary purpose of music itself is to be heard and shared (Haack, 1992). Listening to music is of primary importance to music education (Reimer, 1970), essential to each of the nine “National Standards for Music Education” in the 1994 Standards for Arts
Education (Reimer, 2003), and fundamental to other musical experiences (Hartshorn, 1957). In practice, however, listening to music is often neglected in favor of performance proficiencies in music classrooms and ensembles (Haack, 1992). When addressed, listening skills are frequently taught didactically by acquiring musical vocabulary or participating in activities in response to music listening. In contrast, the current study was based on a constructivist model of education, emphasizing students' reflective understanding of musical experiences, including students' associative and affective descriptors of music with standard musical terms.

Listeners are frequently overwhelmed with the sheer quantity of music and information available online, in print, and through other media, often becoming passive consumers (O'Brien, 1987; Sims, 1990). Similarly, according to Meyers's 1986 text on critical thinking, students' abilities to understand and process information have not kept pace with the voluminous resources currently available to them. Listeners, therefore, would benefit from an approach to music listening instruction involving inquiry and analysis. Critical thinking, a universal term in educational theory and practice (Richardson, 1998), was chosen as a means of encouraging students' individual responses as listeners. Additionally, the critical thinking approach was intended to foster listeners' musical independence through the use of higher-order thinking questions and other opportunities for critical thinking such as improvisation and student leadership in classroom lessons. For the purposes of the current study, critical thinking encompassed both generalizable and context-specific thinking skills. As articulated by Woodford (1995), critical thinking in music is inherently different from other forms of cognition,
yet includes subject-neutral processes frequently termed higher-order thinking skills. In the current study, critical thinking in music was defined as musical understanding through reflection and participation in a constructivist model of education. As a means of developing their musical understanding, students demonstrated: analyzing, synthesizing, comparing and contrasting, developing criteria for judgment, sequencing, making connections, recognizing patterns, and evaluating musical information through active listening, reasoning, and reflection based upon affective responses and prior musical experiences. Higher-order cognitive questions, one of the most effective teaching tools (Taba, 1966), and other opportunities for classroom participation (i.e. creating movements, improvising rhythmic patterns, creating original music maps, and leading classroom activities) were chosen as a means of delivering critical thinking instruction.

For the current study, Critical Thinking Instruction (CTI) was designed by the researcher and included four elements: musical terms and concepts, repeated music listening examples, responding activities, and opportunities for critical thinking. CTI consisted of a series of sixteen (16) classroom lessons, which were based on steps one through four of Stauffer's six step listening sequence (cited in Campbell & Scott-Kassner, 2002). The teacher first prepared the students to listen by introducing or reviewing a concept in the musical example. The teacher then played the musical example and led the students in a participatory activity in response to the musical example. The teacher asked another set of discussion questions to explore and reinforce the musical terms and concepts. Finally, the teacher played the listening example again to
expand the students' listening experience and engage in additional participatory activities.

As a comparison to CTI, an activity-based method of instruction was designed. Activity-Based Instruction (ABI) consisted of three components identical to the CTI lessons: musical terms and concepts, music listening examples, and responding activities. ABI lessons, however, did not include any opportunities for critical thinking; the teacher only taught students the terms and concepts and led students in classroom activities in response to the music listening examples.

A single school site for the current study was found through a series of interviews and informal questionnaires. Two nearly equivalent groups of two intact fifth-grade classes each served as the CTI and ABI treatment groups for the current study (n = 41 and 40, respectively). The CTI and ABI treatment groups were each comprised of two randomly selected intact classes. CTI and ABI lessons were administered by the same music teacher to all classes concurrently four days per week during their regularly-scheduled forty-five (45) minute music classes. As a pretest and a posttest, all subjects completed the researcher-designed measure "Listening and Thinking," which included listening prompts and multiple-choice questions similar to those contained in the "Music Responding Block" of the 1997 NAEP Arts Report Card (Persky, Sandene, & Askew, 1998). In "Listening and Thinking," two pairs of musical examples were played. Subjects responded to twelve questions that constituted what Bailin (1998) termed a "critical challenge" (p. 153) to encourage thinking that drew upon relevant knowledge, concepts, and experiences. Three independent judges scored subjects' written responses;
a Pearson's Product-Moment correlation coefficient and Fisher Z transformation were used to calculate interjudge reliability ($r = 0.92$). Additionally, to control for effects that subjects’ music aptitude may have had on their written responses, the *Musical Aptitude Profile* (Gordon, 1967/1995) was administered and the resulting scores were used as a covariate.

The open-ended responses from the “Listening and Thinking” measure were evaluated as evidence of critical thinking related to the music listening examples (Brophy, 2000). Each subject received a musical term response score, an affective response score, an associative term response score, and a total response score on both the pretest and posttest. One and two-way multivariate analyses of covariance (MANCOVAs) with repeated measures were performed on subjects’ response scores by treatment, by test, and by treatment by test. Also, differences among the types of descriptors provided by the subjects were analyzed in a one-way analysis of covariance (ANCOVA), and distributions of subjects’ posttest responses by treatment were investigated using eight frequency distributions.

In the following section, each finding detailed in the previous chapter is discussed with respect to the related literature and implications for future research. Findings one through seven are discussed in the following subsections: interaction effects, main effects by test, main effects by instructional treatment, analysis of covariance, main effects by types of verbal responses, and analyses of frequency distributions.
Interaction Effect Discussion

In the first finding, there were three significant disordinal interaction effect differences by test and by treatment in subjects’ musical term, associative, and total response scores. Subjects demonstrated significantly different musical term, associative, and total response scores from the pretest to the posttest by instructional treatment, favoring the CTI group. The resulting $p$ values were: 0.001, 0.004, and 0.001, respectively. Increases demonstrated by CTI subjects in musical term, associative, and total response scores as compared to corresponding decreases demonstrated by ABI subjects were described by the three significant disordinal interactions. The mean change in musical term scores for CTI and ABI subjects was a gain of 9.82 points and a loss of 1.69 points, respectively; similarly, the mean change in associative term scores for CTI and ABI subjects was a gain of 2.97 points and a loss of 0.22 points, respectively; finally, the mean change in total response scores for CTI and ABI subjects was a gain of 14.73 points and a loss of 1.34 points, respectively. For a display of the above results, see Figures 1 – 3; for a summary of related data, see Tables 21 - 23.

In three of the four dependent measures, CTI subjects demonstrated significantly greater gains from pretest to posttest than did ABI subjects. Even though all subjects received the same instruction with respect to musical terms and concepts, responding activities, and repeated listening, the ABI subjects demonstrated no significant change in any of the four response scores. Based on subjects’ pretest and posttest performance, the CTI treatment was more effective than the ABI treatment. Therefore, the effect of critical thinking instruction seems to have had a significant and positive effect on subjects’
response scores. Further investigation, however, suggests that not all CTI subjects benefited from the CTI treatment.

Larger posttest standard deviations were demonstrated by CTI subjects as compared to ABI subjects for every response score, suggesting noticeable deviations from normal distributions. Specifically regarding the three disordinal interaction effects, the standard deviations for CTI musical term scores was nearly twice those for ABI scores; the standard deviations for CTI associative scores was almost three times that for ABI scores; and the standard deviation for CTI total response scores was almost two-and-a-half times greater than that for ABI scores. See Tables 21 and 22 for a summary of posttest scores and standard deviation data by instructional treatment. The spread of CTI subjects’ response scores was therefore much larger in every response type than that of ABI subjects’ scores, suggesting that relatively few CTI subjects increased their response scores from pretest to posttest. An examination of the pretest and posttest range of scores is necessary to investigate the difference in standard deviations further.

Changes in the range of CTI and ABI subjects’ scores from pretest to posttest revealed similar results. The range of response scores demonstrated by ABI subjects on the posttest increased by less than one-half of their pretest values. Conversely, the range of response scores for CTI subjects more than doubled for musical term and associative response scores, and the increase in range for CTI total response scores was approximately three times greater from the pretest to the posttest. Additionally, the minimum scores demonstrated by CTI subjects for every response type increased or remained the same from the pretest to posttest, while the maximum scores increased in
every response type. The CTI subjects at both the lowest and highest end of the scoring spectrum demonstrated either no change or noticeable increases from pretest to posttest, suggesting that more than a few CTI subjects increased their response scores from pretest to posttest. The minimum scores demonstrated by ABI subjects, however, decreased for every response type from the pretest to posttest, while the maximum scores increased, indicating that the ABI treatment had a negative impact on the ABI subjects at the lowest end of the scoring spectrum, possibly because the ABI treatment did not sufficiently engage those subjects. For a summary of range, maximum, and minimum scores by test and treatment, see Tables 24 - 27. In contrast to mean response scores and range data, median response scores by treatment and test reveal additional insights and a different perspective on the three disordinal interaction effects.

The three disordinal interaction effects are further described by changes in median scores from pretest to posttest by instructional treatment. Because median values provide the most reliable measures of central tendency in open-ended distributions (Tate, 1965), comparisons by test by treatment of median values are particularly appropriate in the current study. While median musical term, associative, and total response scores demonstrated by CTI subjects increased from pretest to posttest, corresponding median scores demonstrated by ABI subjects decreased. The changes in median scores by test were increases of 9.33, 2, and 14.65 points for CTI subjects’ musical term, associative, and total response scores, respectively; the corresponding changes in ABI median scores were decreases of 1.34, 1, and 1.83 points, respectively. The pretest musical term response score was equivalent for both the CTI and ABI groups, and the pretest median
associative and total response scores were nearly equivalent, slightly favoring CTI subjects by 0.83 and 1.51, respectively. There was a significant difference, however, in corresponding posttest median response scores as described above. Even though the maximum ABI musical term, associative, and total response scores increased from pretest to posttest, the median scores decreased from pretest to posttest. Therefore, median values supported the efficacy of the CTI treatment as demonstrated by increases in musical term, associative, and total response scores. For a summary of median scores by test and treatment, see Tables 21 – 27; for a display of changes in CTI and ABI median response scores by test, see Figures 4 - 7.

Excerpts from actual responses provided by ABI and CTI subjects are illustrative of the above statistical findings. For example, to describe the lullaby “Golden Slumbers,” an ABI subject wrote it was “annoying” on the pretest and “soft” on the posttest indicating a change in classification (from an affective to a musical term response) but no change in verbal response score. When describing the same piece of music, a CTI subject on the pretest wrote, “Calmness, pictures of stars, twinklers, flute” and, on the posttest wrote:

I would picture a funeral with the music being played because the person was sweet and soft like the melody. I also pictured a commercial of baby, a mother kissing him and singing a sweet soft quiet peaceful song like the melody. Also at a school dance when the queen is taking her dance. She might be pretty, like the queen, like the melody.

The above description indicated increased affective and associative descriptors as well as more developed musical references after the CTI treatment. Other examples serve to
illustrate the difference by test and by group. In describing the Sousa march “King Cotton,” one ABI subject wrote, “Most of the instruments were very loud and are usually played for big audiences,” on the pretest and, “They are loud for most of the song,” on the posttest, indicating a decrease in the number of musical term and associative references after ABI instruction. In contrast, a CTI subject describing the same march on the pretest wrote, “It sounds like it at Old Tucson at the parades,” and on the posttest wrote, “The music has cheerful instruments. The rhythm is interesting, the melody is fun and enthusiastic. It made me think and picture a marching band. I also pictured a carousel,” indicating an increase in musical term, affective, and associative descriptors after CTI instruction. Finally when comparing “Golden Slumbers” and, “American Wake/The Nova Scotia Set,” an ABI subject reported, “Speed and style” were different on the pretest and on the posttest wrote, “One was fast, one was slower,” demonstrating a similar level of comparison both before and after instruction. Making the same comparison, a CTI subject on the pretest wrote, “Everything in the music [was different],” and on the posttest wrote, “The first piece was slow and the melody was soft and had more soft wind instruments. The second piece was fast, the melody had more string [instruments],” indicating the increased level of comparison and attention to detail in both the musical examples and verbal descriptions as evidenced by the musical term, affective, and associative terms. The above excerpts from subjects’ responses demonstrate the disordinal interaction effect differences by test and by treatment.

The first finding was consistent with Flowers’s (2000) investigation of students’ written descriptions of music before and after classroom instruction in metaphor and
emotion, analytic musical elements, and temporal language. She found that students used more words after instruction, similar to the current investigation. Flowers, however, also found that after instruction students were no more successful in describing musical examples based on judges’ matching of students’ descriptions with specific pieces of music. Instruction in Flowers’s study was comprised of listening and writing; the instruction did not include thinking skills or higher-order questions.

The first finding is also consistent with Redfield and Rousseau’s (1981) indication of a positive correlation between the use of higher-order questions and student achievement. As measured by subjects’ responses to music listening examples, the CTI group demonstrated significantly larger increases than the ABI group in three of the four dependent measures in the current study. Similarly, the first finding is consistent with Kassner’s (1998a, 1998b) recommendation that questions involving higher-order thinking be used in classroom instruction. He suggested that by increasing teachers’ “Questioning IQ,” students’ achievement could be significantly improved in elementary classroom music in general and in elementary music listening experiences in particular.

The first finding of the current study was similarly consistent with Gall, Ward, Berliner, Cahen, Winne, Elashoff, and Stanton’s (1978) investigation of higher-order cognitive questions (HCQ) during classroom instruction in ecology. The authors found that instruction including HCQ was more effective with respect to student achievement when compared to parallel instruction without HCQ. Students receiving instruction including HCQ demonstrated significantly higher achievement scores ($p \leq 0.05$). The use of HCQ, therefore, was associated with increased knowledge acquisition, retention, and
higher written and spoken achievement scores. The demonstration of enhanced written responses to instruction including HCQ is particularly relevant to the current study. Although the context and measure of student achievement was different in the study performed by Gall et al., implications for the use of HCQ are related to the current study. Implications of the first finding for music education include increased attention to instructional methods and their effect on students’ listening skills.

The first finding of the current study, however, was inconsistent with conclusions reached by Rives (1970) who found no significant difference in listening achievement by instructional approach among the fifth-grade subjects. In his study, Rives also compared the efficacy of two different instructional methods on student listening responses while including statistical controls for variations in subjects’ musical aptitude. Differences in music listening instruction and the dependent measures may explain the inconsistency between Rives’s study and the current investigation.

Given the change in standard deviations from pretest to posttest, the significant increases in CTI mean response scores should be interpreted with caution. Increases in CTI standard deviations on the posttest indicated that the CTI treatment did not benefit all subjects in the CTI treatment group. Increases in CTI median response scores as well as decreases in ABI median response scores, however, support the efficacy of the CTI treatment as compared to the ABI treatment. Further exploration of subjects’ posttest response scores by treatment group in the form of frequency distributions is provided later in this chapter.
Main Effect Discussion: By Test

In the second finding of the current study, there were four significant main effect differences by test; subjects demonstrated higher musical term, affective, associative, and total response scores on the posttest as compared to the pretest. The resulting p values were: 0.006, 0.007, 0.050, and 0.003, respectively. Subjects demonstrated increases in musical term, affective, associative, and total response scores of 4.13, 1.42, 1.25, and 6.80 points, respectively. See Table 17 for pretest and posttest mean scores. Analyzing the response scores of both treatment groups, there were significant increases found from pretest to posttest in musical term, affective, associative, and total response scores.

Instruction in musical terms and concepts was an instructional element common to both CTI and ABI treatments. In the second finding, subjects demonstrated significantly increased musical term response scores, in agreement with the first part of Flowers's (1984) study. She found that instruction in vocabulary produced a significant (p = 0.01) increase in third and fourth-grade subjects' written responses to music. Specifically, the subjects made significantly more references to musical elements (e.g. dynamics, articulation, and tempo). Flowers also noted that the increased references to musical elements were accompanied by decreased references to other musical elements. The second finding of the current study, however, was inconsistent with the second part of Flowers's investigation. While subjects' responses contained more references to the specific musical terms learned during the instruction, they also contained fewer extramusical responses. In other words, there was a limit to the number of descriptors used by the subjects in general. Flowers suggested that her instruction served to focus
subjects' attention on specific musical elements through the acquisition of specific musical terms. Instruction regarding specific musical terms may have shifted the subjects' responses from an emphasis on extramusical terms to an attention to newly-learned musical vocabulary.

In the current study, the CTI and ABI lessons were more involved and extensive than the instruction provided by Flowers, yet there were several similarities between the instruction in both studies. Flowers designed her lessons to facilitate learning new musical vocabulary terms and application of those terms to unfamiliar music listening examples. In the current study, learning musical terms and their applications to musical examples was included in both CTI and ABI lessons; additional higher-order processes for the CTI group included analysis, synthesis, and evaluation. Furthermore, the difference in developmental level of the subjects (i.e. fifth-grade students in the current study versus third and fourth-grade students in Flowers's study) may be indicative of a larger vocabulary in general and may have contributed to the increase in verbal responses. Implications of the current investigation and Flowers's 1984 study include developing music listening instruction that incorporates more than a few musical concepts, lasts a sufficient length of time, and engages the subjects with multiple higher-order thinking skills.

In the third finding, differences in subjects' response scores by treatment were explored in a post-hoc analysis. Although a significant difference by test (pretest and posttest) was found analyzing all subjects' verbal response scores, upon further analysis it was determined that only CTI subjects demonstrated significant changes in response
scores. The resulting $p$ values for CTI subjects musical term, affective, associative, and total response score increases from pretest to posttest were: 0.001, 0.029, 0.007, and 0.001, respectively. CTI subjects demonstrated gains in musical term, affective, associative, and total response scores of 9.82, 1.95, 2.97, and 14.74 points, respectively. See Table 21 for a summary of related mean values. ABI subjects, however, did not demonstrate significant changes in any of the verbal response scores from pretest to posttest. The difference by test in subjects' verbal response scores reported in the second finding, therefore, was primarily a result of CTI subjects' increased response scores from pretest to posttest.

In the second and third findings, the standard deviations of both CTI and ABI subjects' responses by test increased from pretest to posttest. As noted in the first finding, for every category of written responses, both ABI and CTI subjects demonstrated larger standard deviations on the pretest than the posttest. The higher deviation in subjects' scores on the posttest was indicative of individual differences in responses. The effect of both ABI and CTI lessons may have been in part dependent on individual subjects' attitudes and effort, consistent with findings in related literature (Andrews, 1962). The increase in standard deviation, however, was larger among CTI subjects than among ABI subjects, suggesting that the effect of CTI treatment was more pronounced and less predictable than the effect of the ABI treatment. See Tables 18 and 19 for standard deviation values by test.

With respect to musical term, associative, and total response scores, main effect differences in CTI subjects' response scores by test described in the third finding were
consistent with the significant disordinal interactions described in the first finding. While CTI subjects demonstrated a significant increase in musical term, affective, associative, and total response scores from pretest to posttest, ABI subjects demonstrated no significant gains. As measured by subjects’ written responses, the statistically significant differences associated with CTI subjects’ scores were supportive of a critical thinking methodology for music listening instruction.

Both the second and third findings from the current study were consistent with those reported by Flowers (2000) who noted that fifth and sixth-grade students used more words to describe musical examples after instruction in metaphor and emotion, analytic musical elements, and temporal language. Similar to the current study, Flowers’s instruction was administered to two intact classes. Even though Flowers used a different form of written data to measure subjects’ performance, a comparison of subjects’ responses is relevant to the current study. The second and third findings of the current study were in agreement with Flowers’s suggestion to incorporate descriptors of music not commonly featured in traditional listening instruction (i.e. emotional, temporal, and metaphorical terms). Implications of the current study for music listening instruction include increased attention to personally-relevant descriptions of music including associative and affective terms.

In finding three, CTI subjects demonstrated significant increases in affective and associative response scores as well as musical term response scores in a post-hoc analysis by test. A significant gain in subjects’ use of musical terms as a result of instruction, consistent with Flowers’s (2000) investigation, was not unexpected. Significant gains in
affective and associative term responses, however, are notable in their absence from the related literature. CTI lessons may have fostered extramusical connections resulting in a richer musical experience as evidenced by the type and amount of written responses. Significant gains in affective and associative responses by test were supportive of CTI lessons and critical thinking as an instructional approach to music listening and reflective thinking as a pedagogical approach to music education.

The second and third findings in the current study were also consistent with conclusions reached by Haack (1969) who found that two contrasting methods of listening instruction resulted in significantly different gain scores \( (p \leq 0.001) \) favoring the experimental group. Haack therefore advocated a more structured approach to music listening instruction based on conceptual development and listening skills, similar to the CTI lessons in the current study. Although the control instruction in Haack's study consisted of participation in performance ensembles, ABI lessons in the current study served as a comparable form of teacher-directed didactic instruction. The ABI treatment was associated with no significant change in subjects' response scores from pretest to posttest. Therefore, the ABI treatment may not have been a model of effective music listening instruction. ABI subjects, however, may have learned commensurately with CTI subjects; the dependent measure may have discriminated against the ABI subjects as a result of the activity-based instruction. In other words, verbal questioning as an instructional strategy in CTI lessons may have given the CTI subjects an unfair advantage on the dependent measure.
In addition to studies cited above, the second and third findings in the current study were consistent with those reported by Herberger (1983). Analyzing the written responses of thirteen-year-old subjects, he wrote that purposeful music listening instruction was associated with enhanced music listening experiences as demonstrated by subjects' written responses. While students' responses prior to the music instruction focused on volume, instrumentation, time, expression, and pitch, the responses following the instruction were expanded to include formal structures, themes, and "the imaginative content of the work" (p. 45). The relationship between imagination and extramusical associations was also supported by Haack's (1992) assertion that verbal imagery is a useful tool in music listening pedagogy. Herberger observed that about half the students used facts in their responses following the instruction; his findings regarding subjects' written responses supported the effect of music listening instruction. Herberger's finding with respect to the imaginative responses is relevant to the associative response scores in the current study. Extramusical associations reported by the subjects in the current study (e.g. colors, movement, and animals) were indicative of imaginative associations.

Similarities between Herberger's investigation and the current study with respect to data collection, research design, and grade level may have contributed to the agreement in these studies' findings.

The second and third results of the current study, however, were inconsistent with Andrews's (1962) findings on music listening instruction. She contrasted a didactic approach emphasizing factual instruction with an experiential approach focusing on self-initiated and optional activities. The control instruction consisted of didactic lower-level
cognitive instruction while the experimental instruction contained a variety of self-initiated activities. Andrews reported no significant difference in subjects' musical achievement by instructional method; her results are therefore inconsistent with those of the current study. Perhaps differences in the two studies' dependent measures may explain the contradiction; Andrews measured subjects' achievement with a test based on the Minnesota State Music Curriculum and two classroom music texts. In contrast, the dependent measure for the current study was not scored for accuracy; the subjects' responses were instead scored for term usage and analyzed for differences by type of response and by test to determine any significant change in the number of responses.

Main Effect Discussion: By Treatment

In the fourth finding of the current study, there were four significant main effect differences by instructional treatment. CTI subjects demonstrated higher musical term, affective, associative, and total response scores than ABI subjects. The resulting *p* values were: 0.001, 0.016, 0.001, and 0.001, respectively. The differences in musical term, affective, associative, and total response scores favoring the CTI subjects were 5.83, 1.30, 2.59, and 9.72 points, respectively. See Table 16 for a summary of related mean values.

A difference in pretest response scores by instructional treatment could have predisposed CTI subjects to score higher than ABI subjects on the posttest. Subjects in the CTI group could have scored higher on the pretest than subjects in the ABI group and therefore been predisposed to higher order thinking during the course of the study. Differences in pretest musical term, affective, associative, and total response scores favoring the CTI group, however, were not found to be statistically significant. See
Tables 18 and 19 for a summary of pretest mean, standard deviation, and \( p \) values by treatment group. Because pretest scores by group were not significantly different, it is likely that participation in CTI lessons rather than a predisposition to higher-order thinking fostered significantly higher posttest response scores.

The fourth finding of the current study was consistent with Wilen and Clegg's (1986) summary of related literature on questioning techniques in classroom instruction. The authors found that students' achievement was associated with the types of questions asked by teachers. They asserted that asking questions is the most direct way of encouraging student participation, facilitating learning, and stimulating thinking. Wilen and Clegg's findings are in agreement with the significant differences found for instructional treatment in the current study. Because higher-order thinking questions were one key component distinguishing the CTI treatment from the ABI treatment in the current study, the above comparison by instructional treatment in the fourth finding supports the use of higher-order questions to stimulate thinking and encourage students' responses to music listening examples.

The fourth finding was also consistent with Kassner's (1998a, 1998b) assertions concerning the efficacy of music teachers' "Questioning IQ." He suggested that asking more intelligent questions and following up in response to students' answers could lead to increased involvement and participation in the music-learning process. Beyond listening activities, Kassner offered other examples of using more intelligent questions and suggestions for higher-order questioning techniques in a broader musical context. In the form of practical guidance to teachers, he advocated using higher levels of cognition
(i.e. evaluation, synthesis, and analysis) in the questions asked to stimulate, engage, and challenge students.

The fourth finding was also in agreement with Bundra’s (1993) conclusion that children were able to describe their own thoughts while listening to music. In her descriptive study, she found that children could make and express their own judgments about music and could articulate their ideas about music listening examples. With respect to their responses to music listening, CTI subjects demonstrated similar abilities in the current study.

Analysis of Covariance: Musical Aptitude

The melody (T1) and rhythm (R2) subtests of the Musical Aptitude Profile (Gordon, 1967/1995) were administered as a covariate and were found to have no significant effect on subjects’ written response scores in the current study. Corresponding mean and standard deviation data were consistent with this finding; see Tables 12 and 13 for a summary of related covariate data. In multivariate analyses of covariance (MANCOVAs), subjects’ response scores were analyzed to account for any significant main effect of aptitude. Subjects’ musical aptitude was therefore considered and its effect accounted for when analyzing subjects’ written response scores to eliminate any potential differences between subjects by treatment and to address any variance in the subjects’ musical aptitude that could ultimately influence the statistical outcome.

There was no significant difference in subjects’ musical aptitude scores by treatment group. The mean musical aptitude scores were 105.7 and 100.1 for the CTI and ABI groups, respectively; the corresponding standard deviation values were 12.48 and
14.59 for the two treatment groups, respectively. Even though subjects' musical aptitude was unevenly distributed by group in favor of the CTI subjects, the difference of 5.6 points on the Musical Aptitude Profile (Gordon, 1967/1995) was not statistically significant. Similarly, there were no significant differences in musical aptitude found among the four classes randomly assigned to the two treatment groups. See Tables 14 and 15 for a summary of associated mean and standard deviation values by instructional treatment and by class.

Using the music aptitude scores of 1,627 fifth-grade subjects, Gordon (1965/1988) normed and standardized the Musical Aptitude Profile (Gordon, 1967/1995). He found the combined average standard scores for the melody (T1) and meter (R2) subtests to be 92.8 with standard deviations of 9.23 and 8.15, and reliability coefficients of 0.75 and 0.70, respectively. Compared to the standardized means and standard deviations, subjects in the current study demonstrated higher musical aptitude scores as well as larger standard deviations. A larger standard deviation was expected with a smaller number of subjects in the current study ($n = 81$). Larger musical aptitude scores in the current study may be attributed to changes in the national population since Gordon's standardization in 1964-65.

In the current study, subjects' total response scores were not found to be significantly influenced by their musical aptitude score on Gordon's Musical Aptitude Profile (1967/1995). In the related literature on verbal descriptions of music, however, a measure of music aptitude was used only once. The relationship between subjects' musical aptitude and written descriptors of music was investigated by Rives (1970) who
reported that subjects’ musical aptitude contributed 41.28% to their performance on a four-part listening achievement test designed by the researcher. Rives’s finding concerning musical aptitude and listening achievement is inconsistent with the fifth finding of the current study, possibly because he used a different measure of musical aptitude, *The Seashore Measures of Musical Talents* (Seashore, 1939/1960). The link between written measures of music listening and music aptitude may be explored in future investigations.

**Main Effect Discussion: By Type of Verbal Response**

In the sixth finding of the current study, there were significant differences among the three types of verbal responses to music listening examples; subjects demonstrated significantly higher musical term response scores than affective response scores or associative response scores. The mean musical term score, 18.40, was significantly higher than the mean affective and associative response scores, 2.89 and 3.90, respectively. Resulting *p* values in a *post-hoc* Sheffé test were 0.001 for both comparisons. See Table 28 for a summary of related mean and standard deviation values. Significantly greater use of musical terms to describe music was expected. The use of extramusical terms constituting affective and associative responses is consistent with previous research (Johnson, 2003). The use of affective and associative terms to describe music was in agreement with Flowers’s (1990) assertion that children naturally use extramusical analogies and images to describe music. She suggested that such descriptors are effective ways of focusing their attention during listening as implemented in CTI lessons and classroom discussions during the current study.
The sixth finding of the current study was also consistent with data from a pilot study on "Listening and Thinking." The written responses of fifty-seven fifth-grade students were analyzed by type using the same dependent measure as in the current study. From a series of one-way analyses of variance (ANOVAs), a significantly larger number of musical terms \( p = 0.001 \) was found in the subjects' responses as compared to other types of responses. Perhaps music listening instruction is by definition primarily focused on musical terms, or perhaps subjects consider affective and associative terms to be additional explanations, embellishments of their learned musical vocabulary. Another possibility is that subjects logically think they are expected to use musical terms to describe music. In any case, similar trends in the pilot study regarding musical term, affective, and associative response scores were observed in the current study. Findings of the pilot study therefore support the sixth finding in the current study. In addition to classifications, qualitative differences among subjects' responses may be explored in future studies.

Frequency Distribution Discussion

An examination of the frequency distributions for musical term, associative, and total response scores by treatment provides details about CTI and ABI subjects' posttest responses. Analysis of the posttest frequency distributions by treatment revealed that all distributions were positively skewed, indicating the presence of several higher response scores than expected in normal distributions. The ABI distributions, however, were less positively skewed than the CTI distributions, indicating that the ABI distributions more closely approximated a normal distribution. Similarly, the kurtosis values of the ABI
distributions indicated a more normal distribution than those of the CTI distributions. See Table 29 for skewness and kurtosis values by treatment and response score. The musical term, affective, associative, and total response score distributions are discussed in greater detail below.

Both CTI and ABI musical term posttest responses had similar frequency distributions; all subjects scored in the same range of \( z \) scores (from \( z = -3 \) to +4) and the frequency distributions associated with both treatment groups were positively skewed. The ABI distribution, however, more closely approximated a normal distribution, while the CTI distribution has a more positively-skewed shape; the respective degrees of skewness were 0.92 and 0.38. The effect of CTI instruction, therefore, was associated with a less normal distribution, suggesting that the CTI treatment increased the scores of fewer subjects than the ABI treatment.

Frequency distributions for the affective response scores by treatment group revealed similar findings. The affective frequency distributions associated with both treatment groups were positively skewed. The ABI distribution, however, more closely approximated a normal distribution, while the CTI distribution had a more positively-skewed shape; the degrees of skewness were 2.16 and 1.04, respectively. The distribution of CTI affective scores revealed that a majority of subjects scored in the range \( z = -2 \) to +1 while in the corresponding ABI distribution, a majority of the scores fell in the range \( z = -1 \) to +1.

The CTI associative posttest distribution was also similar to that for the CTI musical term scores; the distribution included a range of six \( z \) scores and was positively
skewed. The ABI associative posttest distribution, however, revealed three clusters of scores; the largest group was at the center of the distribution \((z = -1)\) while the other two clusters were located near the minimum and maximum of the distribution \((z = -3 \text{ and } +1)\). Even though the ABI associative posttest distribution encompassed a larger range of \(z\) scores \((z = -4 \text{ to } +4)\) than the CTI distribution \((z = -2 \text{ to } +4)\), the standard deviation and range of scores for the CTI distribution were greater than those of the ABI distribution.

Finally, the total response posttest score distribution for CTI subjects was similar to that for ABI subjects. Both distributions were positively skewed and had a similar range of \(z\) scores. The span of \(z\) scores in the ABI distribution was one standard deviation lower than that of the CTI distribution; from \(z = -4 \text{ to } +4\) and from \(z = -3 \text{ to } +5\), respectively. The CTI distribution, however, revealed two high scores at \(z = +2\) and \(+4\) while the ABI distribution displays one high score at \(z = +3\). See Figures 8 - 15 for the musical term, associative, and total response score frequency distributions.

The above discussion of skewness and kurtosis values for CTI and ABI instructional treatments revealed more normal distributions in the ABI response scores. Conversely, the CTI distributions were shown to be more positively skewed and prone to include outliers as a result of their kurtosis values. However, a normal distribution of scores is assumed in statistical analyses of covariance (MANCOVAs), employed in the current investigation; consequently, the statistical outcomes articulated in the findings of this study should be interpreted with caution.
Conclusions

In music education, there is a need for effective music listening instruction (Reimer, Hoffman, & McNeil, 1982). The importance of listening instruction and its effect on enhancing students' music listening experiences was explored in the current study. In CTI lessons, students' responses to music listening were highlighted; instead of merely teaching musical terms and concepts through activities and explanations, the teacher questioned students and presented them with opportunities for critical thinking about the musical examples (i.e. creating movements, improvising rhythmic patterns, creating original music maps, and leading classroom activities) to encourage critical thinking skills. Significantly enhanced responses to music listening associated with such a critical-thinking approach were evident in the results of the current study. Although the statistically significant results offered substantial support for an approach to music listening instruction based on critical thinking, statistical and pedagogical issues discussed earlier in this chapter suggest cautious interpretation of the statistical results. The ABI treatment may not have been comparable instruction for the CTI treatment; specifically, the inclusion of additional activities in response to the music listening examples together with the questions asked by the teacher may have provided an unfair advantage to the subjects receiving the CTI treatment. In future investigations researchers could make a clearer distinction between the effect of questions asked by the teacher and other opportunities for critical thinking about the music listening examples. Perhaps other factors beyond the limitations of the current study such as the effects of student attitude, gender, grade point average, teacher bias, and prior musical experience may have
influenced the statistical outcomes. Further investigations are necessary to explore the effects of these and other possibilities.

In summary, the CTI treatment, as compared to the ABI treatment, was shown to be significantly more effective in terms of subjects’ musical term, associative, and total written responses to music listening examples. Because the CTI treatment was inclusive of the ABI treatment, higher response scores were expected as long as critical thinking questions and related activities enhanced the subjects’ responses to music listening examples. In fact, CTI subjects demonstrated significant gains in musical term, affective, associative, and total written responses during the course of the current study. In contrast, ABI subjects demonstrated no significant change in any of the written response scores.

The positive effects of the CTI treatment, while statistically significant, were inconsistent with descriptive statistics such as frequency distributions explored in further analyses. Reviewing standard deviation, range, and mean response scores by test and treatment group, it may be concluded that a relatively small number of CTI subjects increased their musical term, associative, and total response scores from pretest to posttest. Noticeable increases in standard deviations and ranges of CTI scores from pretest to posttest suggest that the dramatic positive effects of the CTI treatment were limited to a few subjects. However, there were increases in CTI subjects’ median musical term, associative, and total response scores and corresponding decreases in ABI subjects’ median response scores, indicating that the CTI treatment had a positive impact while the ABI treatment had a negative impact on subjects’ median scores, the most reliable measure of central tendency in open-ended distributions (Tate, 1965). The CTI treatment
may have positively influenced the scores of more than a few subjects; for musical term and total responses, both minimum and maximum CTI scores increased as a result of CTI instruction, suggesting that CTI subjects at both ends of the scoring spectrum demonstrated increased response scores. The associated frequency distributions, however, were positively skewed and displayed the presence of noticeably higher scores when compared to the rest of the distribution. The apparent advantage of CTI instruction indicated by the three disordinal interaction effects should therefore be interpreted with caution. Additionally, changes in minimum scores from pretest to posttest demonstrated by ABI subjects indicated that the ABI treatment may not have been an effective model of music listening instruction.

The findings discussed in this chapter were limited to subjects’ written responses. Even though listeners understandably know more than they can articulate (Reese, 1980), writing about music represents a process of discovery and is one measurable product of listeners’ experiences. In evaluations of subjects’ learning, some form of demonstrable product is necessary. Verbal data may be an incomplete measure of subjects’ musical understanding; however, verbal responses are the most prevalent form of communication about the arts and are central to describing music (Flowers, 2003). Nevertheless, the measurement of learning employed in the current study may have unfairly disadvantaged the ABI subjects. In other words, ABI subjects may have learned as much as CTI subjects, internalized their learning, but not been able to express their learning on the dependent measure. By using higher-order cognitive questions as a major component of the critical thinking instruction, the CTI treatment may have been given CTI subjects an
unfair advantage on the dependent measure which consisted of only written responses. Conversely, as a result of the ABI treatment, ABI subjects may have been at a disadvantage with respect to the dependent measure “Listening and Thinking.” The findings discussed in this chapter should therefore be interpreted considering this limitation.

Higher-order cognitive questions and other opportunities for critical thinking were used to encourage subjects to engage in analysis, evaluation, and synthesis in the CTI lessons. In the current study, making decisions and informed judgments were understood to be based on some content knowledge. Both CTI and ABI lessons, therefore, contained instruction in numerous musical terms and concepts. Beyond this didactic instruction, however, CTI lessons engaged subjects through reasoning, imagination, and reflection on the musical examples during creative, improvisatory, and leadership activities. Instead of a didactic approach based on acquiring information to be tested for accuracy, CTI lessons were based on a constructivist approach to learning, intended to facilitate student decision-making and application of musical concepts and terms without a concern for finding the “right” answer.

Given the significant main effect differences in subjects’ affective responses by treatment and by test, the lack of a significant interaction effect difference in subjects’ affective responses was unexpected. Perhaps thinking and feeling are two mutually exclusive pursuits. Even so, more creative and open-ended activities could be included in future curricula to encourage affective responses to music listening examples.
Regarding the lessons themselves, the teacher commented that both the CTI and ABI lessons were well designed, interesting, and consistent with the lesson objectives. The musical material was also well received by the teacher and subjects, representing “an excellent mixture of style and texture” (personal communication, May 30, 2003). The subjects and the teacher also found the movement props (flags, conducting batons, and tennis balls) to be effective and enjoyed using them during the lessons. In several CTI classes, the teacher noted that she had to contain students’ enthusiasm during classroom discussions to keep within time constraints. The teacher also reported that she enjoyed teaching the CTI lessons more than teaching the ABI lessons, perhaps because she believed her teaching style to be more consistent with the CTI lessons. Perhaps the teacher had a bias toward the CTI treatment that affected the outcome of the current study. In a review of ten randomly selected lessons, however, three independent judges reported a high level of agreement between the teacher’s presentation of the lessons and the written lesson plans.

Implications

Based on findings discussed earlier in this chapter, music listening may be understood to be a truly thoughtful process. Therefore, effective music listening pedagogy needs to include higher-order thought processes. Because a critical thinking approach to music listening pedagogy was associated with significantly higher scores on every measure of music listening responses, music educators could incorporate higher-order cognitive questions into classroom instruction and expect enhanced student
participation and responses to music listening examples. However, future research is needed to explore implications of statistical findings such as the apparent lack of effect the ABI treatment had on subjects' response scores.

Quality teaching includes attention to thought processes instead of mere facts. Depending on the types of questions they ask, teachers have significant influence on their students' achievement; questions are therefore teachers' most effective way of stimulating learning and thinking in the classroom (Wilen & Clegg, 1986). Teaching using higher-order questions and critical thinking skills, however, necessitates trust and risk-taking in the classroom. Although teachers may not initially accept critical thinking as a basis for music listening instruction, the findings of the current study indicate significant benefits of such an approach.

Although Redfield and Rousseau (1981) did not study student achievement in musical contexts, their conclusions are consistent with the findings of the current study. Implications for music education include exploration of similar instructional pedagogies that might benefit students in musical settings. Music educators can have a great impact on students' ability to listen and make sense of music (Darrow, 1990). In comparison to students' ability to hear, the ability to listen to music is subject to greater influence by music educators.

Implications of the current study for music cognition are indicative of richer and more complex responses to music listening. As advocated by Webster and Richardson, "music teachers must encourage children to think more deeply and more imaginatively about music and engage students . . . if real music learning is to occur" (1993, p. 7). A
definition of musical thinking may be enhanced by critical thinking in musical contexts as investigated in the current study. Musical thinking, necessary for students to achieve musical independence (Boardman, 1989), may be related to critical thought processes yet distinct from other forms of cognition. Webster and Richardson suggested that musical thinking includes, “perceiving, representing, storing, and mentally manipulating musical sounds . . . sharing aspects of these musical sound structures with other in some form of product . . . and linking these musical sound structures with affect to achieve a deeper sense of personal meaning” (1993, p. 8). In the current study, CTI subjects demonstrated significant gains by engaging in the specific classroom activities suggested by Webster and Richardson (1993); by doing so, the subjects provided insights into the definition of musical thinking. Curriculum development in music education should include thoughts, ideas, and open-ended responses as well as vocabulary and activities. By augmenting students’ awareness of music as a thoughtful experience, music educators can engage students more effectively, encourage them to think more musically, and inspire them to be more musically independent.

Directions for Future Study

By revising and altering several areas of the current study, researchers could further investigate the relationship between critical thinking instruction and music listening in future studies. For example, in addition to musical aptitude, future researchers may strengthen their findings by including a measure of writing abilities as a covariate when investigating written responses to music listening.
In the current study, no significant interaction effect was found by test by treatment in subjects' affective responses to music. The arts, however, accommodate both cognitive and affective processes, and artistic disciplines such as music are a promising avenue for innovative instruction. Perhaps CTI lessons in the current study were not sufficiently focused on affective responses as compared to musical terms and associative responses. Directions for future research include designing music instruction with an emphasis on affective responses to music to explore the connection between critical thinking and affective responses in a musical context.

LeBlanc (1980) asserted that enhancing listeners' thought processes may positively influence listening to music more directly than many other factors. Implications for future study include exploring the connection between listeners' mental activity and their listening experience. Together with writing and listening skills, future researchers could design instructional strategies combining opportunities for critical thinking with writing and listening skills. Perhaps such augmented instruction would result in more effective descriptions of music and engage students' thinking, an activity involved in both listening and writing.

Non-verbal responses to music listening were not addressed as dependent measures in the current study. Alternative measures of musical understanding could be included in future research. Using alternative or additional measures of musical understanding would provide researchers with additional opportunities to increase their understanding of critical thinking in musical contexts. A broadly based dependent measure including non-verbal responses to music listening could offer future researchers
expanded insights into thinking and music listening. Perhaps an approach including the meaning and accuracy of musical terms as used by Andrews (1962) would be more relevant to curriculum design. While the scope of the current study was limited by the design of the dependent measure, the focus of critical thinking pedagogy was based on encouraging students' responses. Future researchers could investigate connections between critical thinking instruction and accuracy with respect to musical term usage.

Similarly, using a standard measure of critical thinking such as The Watson-Glaser Critical Thinking Appraisal (1980) or The Ennis-Weir Critical Thinking Essay Test (1988) would allow researchers to compare results of critical thinking instruction across multiple educational contexts.

The sample of subjects in the current study was balanced by gender; 52% of the subjects were boys and 48% were girls. Because gender-based effects on subjects' response scores were beyond the limitations of the current study, researchers could address this possible factor on critical thinking and music listening instruction in future studies. Additionally, because the sample of subjects in the current study was largely Caucasian (82%) and had mid- to upper socio-economic status (with 3% of students qualifying for free or reduced lunch), researchers could investigate the effects of variations in ethnicity and socio-economic status on subjects' response scores in future studies.

Higher order cognitive questioning strategies were utilized as a primary vehicle for the CTI treatment in the current study. Other opportunities for critical thinking, however, were included in the CTI treatment including improvisation and student responses.
leadership. Kassner (1998a & 1998b) suggested the value of ownership and autonomy in music education; future researchers could empirically investigate the relationship between pedagogy based on student ownership and responses to music listening examples.

As a result of the statistical analyses demonstrating decreases in ABI subjects’ response scores during the course of the current study, questions concerning the quality of the ABI instruction were raised. In future studies, researchers could develop the best possible instruction with respect to student involvement and motivation to serve as a comparison with critical thinking instruction. Reliance on the teacher’s questioning skills was also not addressed in the current study. Questions about the teacher’s role in determining the ultimate success of CTI lessons as opposed to the scripted lesson plans remain unaddressed by the current study. Future researchers could investigate the efficacy of teacher-training programs with respect to critical thinking skills and student achievement. As suggested by one of the experts on critical thinking and music education, cooperation between researchers and practitioners may be enhanced by such efforts to use empirical findings for classroom applications (Haack, 1992). Replication of the current study with subjects in different socioeconomic status, using different musical material, and at different grade levels could also be useful in developing a more comprehensive understanding of critical thinking in musical contexts.

Of all the arts, music is often taught the least creatively (Fowler, 1996). By teaching music more thoughtfully, educators can engage students in music listening resulting in enhanced participation, involvement, and imagination. Therefore, critical
thinking instruction in music listening is a promising avenue for promoting thoughtful music curricula, developing students' musical independence, and advocating for critical thinking in the arts and education.
Dear Mr. Johnson:

We received your research proposal as cited above. The procedures to be followed in this study pose no more than minimal risk to participating subjects. Regulations issued by the U.S. Department of Health and Human Services [45 CFR Part 46.110(b)] authorize approval of this type project through the expedited review procedures, with the condition(s) that subjects' anonymity be maintained. Although full Committee review is not required, a brief summary of the project procedures is submitted to the Committee for their endorsement and/or comment, if any, after administrative approval is granted. This project is approved effective 6 December 2002 for a period of one year. Note: Site authorization from Tucson Unified School District must be obtained and submitted prior to initiation of project.

The Human Subjects Committee (Institutional Review Board) of the University of Arizona has a current assurance of compliance, number M-1233, which is on file with the Department of Health and Human Services and covers this activity.

Approval is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consent form(s) used (copies of which we have on file) without the knowledge and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

A university policy requires that all signed subject consent forms be kept in a permanent file in an area designated for that purpose by the Department Head or comparable authority. This will assure their accessibility in the event that university officials require the information and the principal investigator is unavailable for some reason.

Sincerely yours,

Theodore J. Gadzik, Ph.D.
Chair
Social and Behavioral Sciences Human Subjects Committee

TJG-ti
Enclosures
cc: Departmental/College Review Committee
20 February 2003

Daniel Johnson, M.M.  
Advisor: Brian Ebbe, Ph.D.  
Department of Music  
Music Building, Rm. 109  
PO Box 210004

RE: BSC B02.223 THE EFFECT OF CRITICAL THINKING INSTRUCTION ON MUSIC LISTENING SKILLS OF FIFTH-GRADE STUDENTS

Dear Mr. Johnson,

We received your 19 February 2003 letter and accompanying revised consenting documents and site authorization for the above cited project. The study site has been changed from Tucson Unified School District to Manzanita Elementary School in Catalina Foothills School District with a resulting change in subjects [from 200 to 100 students and from 4 teachers to 1] and change in project period [from January - March 2003 to April - May 2003]. These changes do not impact subject safety and are reflected in the submitted documents. Therefore, approval for these changes is granted effective 20 February 2003.

The Human Subjects Committee (Institutional Review Board) of the University of Arizona has a current assurance of compliance, number M-1233, which is on file with the Department of Health and Human Services and covers this activity.

Approval is granted with the understanding that no further changes or additions will be made either to the procedures followed or to the consent form(s) used (copies of which we have on file) without the knowledge and approval of the Human Subjects Committee and your College or Departmental Review Committee. Any research related physical or psychological harm to any subject must also be reported to each committee.

A university policy requires that all signed subject consent forms be kept in a permanent file in an area designated for that purpose by the Department Head or comparable authority. This will assure their accessibility in the event that university officials require the information and the principal investigator is unavailable for some reason.

Sincerely yours,

Theodore J. Glattke, Ph.D.  
Chair  
Social and Behavioral Sciences Human Subjects Committee

TJG-dl  
cc: Departmental Review Committee
**PARENTAL CONSENT FORM**

Project Title: The Effect of Critical Thinking Instruction on Music Listening Skills of Fifth-Grade Students

I AM BEING ASKED TO READ THE FOLLOWING MATERIAL TO ENSURE THAT I AM INFORMED OF THE NATURE OF THIS RESEARCH STUDY AND OF HOW MY CHILD WILL PARTICIPATE IN IT, IF I CONSENT FOR HIM/HER TO DO SO. SIGNING THIS FORM WILL INDICATE THAT I HAVE BEEN SO INFORMED AND THAT I GIVE MY CONSENT. FEDERAL REGULATIONS REQUIRE WRITTEN INFORMED CONSENT PRIOR TO MY CHILD'S PARTICIPATION IN THIS RESEARCH STUDY SO THAT I CAN KNOW THE NATURE AND RISKS OF MY CHILD'S PARTICIPATION AND CAN DECIDE TO ALLOW HIM/HER TO PARTICIPATE OR NOT PARTICIPATE IN A FREE AND INFORMED MANNER.

**PURPOSE**

My child is being invited to participate voluntarily in the above-titled research project. The purpose of this project is to determine the effect of critical thinking instruction on the music listening skills of fifth grade students.

**SELECTION CRITERIA**

My child is being invited to participate because he/she is a fifth-grade student in the Manzanita School of the Catalina Foothills School District. Approximately one hundred (100) subjects will be enrolled in this study.

**PROCEDURE(S)**

If I agree to participate, I will be asked to consent to having my child take two listening tests, each given twice during the study to measure the learning my child shows as a result of the instruction. The instructional procedures may include moving, drawing, and playing simple instruments while listening to music. The instruction may also include group discussions about music and students' ideas.

**RISKS**

Because the activities which will be used as part of the critical thinking instruction program could typically be included in any school day, any risk to the subjects will be minimal or absent. The instruction involves some physical movement and there is a slight potential for subjects hurting themselves. In the unlikely event of an injury occurring, standard school procedures will be followed to take care of my child. Because the subjects may express their own opinions and explanations regarding the musical examples, they could also be subject to minor embarrassment and group discussions may be stressful for them. My child will be allowed to end his/her participation in the study at any time for these or other reasons.

**BENEFITS**

There are no guaranteed direct benefits associated with participation in this study, but potential benefits of participation in the study include a heightened sense of music listening, an increased capacity for critical thought, and a greater appreciation for music. By applying critical thinking instruction in a musical setting, the students may also benefit by using critical thinking skills in other school-related and extracurricular areas.

**CONFIDENTIALITY**

The data gathered for this study will be confidential, available only to the investigator and his advisor. The students and classrooms will be identified by a numerical code, not by name. The test results will be stored in room 151 of the Music Building at the University of Arizona, until the completion of this study. All data will be destroyed by August 31, 2003.
CONFIDENTIALITY
The data gathered for this study will be confidential, available only to the investigator and his advisor. The students and classrooms will be identified by a numerical code, not by name. The test results will be stored in room 151 of the Music Building at the University of Arizona, until the completion of this study. All data will be destroyed by August 31, 2003.

PARTICIPATION COSTS AND SUBJECT COMPENSATION
There will be no cost to participate in this study; there will also be no payment made for participating in this study.

CONTACTS
I can obtain further information from the principal investigator Daniel Johnson, Ph.D. Candidate, at (520) 626-8498. If I have questions concerning my rights as a research subject, I may call the Human Subjects Committee office at (520) 626-6721.

AUTHORIZATION
BEFORE GIVING MY CONSENT BY SIGNING THIS FORM, THE METHODS, INCONVENIENCES, RISKS, AND BENEFITS HAVE BEEN EXPLAINED TO ME AND MY QUESTIONS HAVE BEEN ANSWERED. I MAY ASK QUESTIONS AT ANY TIME AND I AM FREE TO WITHDRAW MY CHILD FROM THE PROJECT AT ANY TIME WITHOUT CAUSING BAD FEELINGS. MY PARTICIPATION IN THIS PROJECT MAY BE ENDED BY THE INVESTIGATOR FOR REASONS THAT WOULD BE EXPLAINED. NEW INFORMATION DEVELOPED DURING THE COURSE OF THIS STUDY WHICH MAY AFFECT MY WILLINGNESS TO ALLOW MY CHILD TO CONTINUE IN THIS RESEARCH PROJECT WILL BE GIVEN TO ME AS IT BECOMES AVAILABLE. THIS CONSENT FORM WILL BE FILED IN AN AREA DESIGNATED BY THE HUMAN SUBJECTS COMMITTEE WITH ACCESS RESTRICTED TO THE PRINCIPAL INVESTIGATOR, DANIEL JOHNSON, OR AUTHORIZED REPRESENTATIVE OF THE MUSIC DEPARTMENT. I DO NOT GIVE UP ANY OF MY LEGAL RIGHTS BY SIGNING THIS FORM. A COPY OF THIS SIGNED CONSENT FORM WILL BE GIVEN TO ME.

________________________
Child's Name

________________________   ____________________
Parent/Legal Guardian (if necessary) Date

Check here if you would like to receive a copy of the results of this study upon completion.

INVESTIGATOR'S AFFIDAVIT
I have carefully explained to the subject the nature of the above project. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid. A language or educational barrier has not precluded this understanding.

________________________   ____________________
Signature of Investigator Date
MINOR'S ASSENT FORM

Your mother or father has told me it was okay for you to be in a listening study at your school. We are trying to understand how you think about music and how thinking about music helps you listen to music. To do that, you will be asked to listen to some music, use some movement with and without streamers, play simple instruments, draw pictures to music, and talk about the music you heard. To see how the classes help you listen, you will take two tests at the beginning of the study, and then again at the end of the study. These activities will all take place during school time. Do you understand? Is it OK?

________________________________________  ________________________
Subject's Name and Signature                  Date

________________________________________  ________________________
Investigator's Signature                      Date
TEACHER'S CONSENT-FORM

Project Title: The Effect of Critical Thinking Instruction on Music Listening Skills of Fifth-Grade Students

I AM BEING ASKED TO READ THE FOLLOWING MATERIAL TO ENSURE THAT I AM INFORMED OF THE NATURE OF THIS RESEARCH STUDY AND OF HOW I WILL PARTICIPATE IN IT. IF I CONSENT TO DO SO, SIGNING THIS FORM WILL INDICATE THAT I HAVE BEEN SO INFORMED AND THAT I GIVE MY CONSENT. FEDERAL REGULATIONS REQUIRE WRITTEN INFORMED CONSENT PRIOR TO PARTICIPATION IN THIS RESEARCH STUDY SO THAT I CAN KNOW THE NATURE AND RISKS OF MY PARTICIPATION AND CAN DECIDE TO PARTICIPATE OR NOT PARTICIPATE IN A FREE AND INFORMED MANNER.

PURPOSE

I am being invited to participate voluntarily in the above-titled research project. The purpose of this project is to determine the effect of critical thinking instruction on the music listening skills of fifth-grade students.

SELECTION CRITERIA

I am being invited to participate because I am a music teacher of fifth-grade students in the Manzanita School of the Catalina School District.

PROCEDURE(S)

If I agree to participate, I will be asked to administer two listening tests, each given twice during the study to measure the learning the students show as a result of the instruction. I may be asked to teach from a set of lessons involving moving, drawing, and playing simple instruments while listening to music. I may also be asked to lead group discussions about music and students' ideas. To prepare me to teach the Activity Based Instruction (ABI) and the Critical Thinking Instruction (CTI), I agree to attend a training session conducted by the researcher. I will also agree to be videotaped randomly during the course of the study to ensure the instruction is being administered according to the lesson plans. The videotapes will be viewed only by the investigator and his advisor. No students will be identified in the videotapes; the videotapes will be erased by August 31, 2003.

RISKS

Because the activities which will be used as part of the critical thinking instruction program could typically be included in any school day, any risk to the subjects will be minimal or absent. The instruction involves some physical movement and there is a slight potential for subjects hurting themselves. In the unlikely event of an injury occurring, standard school procedures will be followed to take care of the subject. Because the students may express their own opinions and explanations regarding the musical examples, they could also be subject to minor embarrassment and group discussions may be stressful for them. The subject will be allowed to end his/her participation in the study at any time for these or other reasons.

BENEFITS

There are no guaranteed direct benefits associated with participation in this study, but potential benefits of participation in the study include a heightened sense of music listening, an increased capacity for critical thought, and a greater appreciation for music. By applying critical thinking instruction in a musical setting, my students may also benefit by using critical thinking skills in other school-related and extracurricular areas.
CONFIDENTIALITY
The data gathered for this study will be confidential, available only to the investigator and his advisor. The students and classrooms will be identified by a numerical code, not by name, by school, or by teacher. The test results will be stored in room 151 of the Music Building at the University of Arizona, until the completion of this study. All data will be destroyed by August 31, 2003.

PARTICIPATION COSTS AND SUBJECT COMPENSATION
There will be no cost to participate in this study; there will also be no payment made for participating in this study.

CONTACTS
I can obtain further information from the principal investigator Daniel Johnson, Ph.D. Candidate, at (520) 626-8498. If I have questions concerning my rights as a research subject, I may call the Human Subjects Committee office at (520) 626-6721.

AUTHORIZATION
BEFORE GIVING MY CONSENT BY SIGNING THIS FORM, THE METHODS, INCONVENIENCES, RISKS, AND BENEFITS HAVE BEEN EXPLAINED TO ME AND MY QUESTIONS HAVE BEEN ANSWERED. I MAY ASK QUESTIONS AT ANY TIME AND I AM FREE TO WITHDRAW FROM THE PROJECT AT ANY TIME WITHOUT CAUSING BAD FEELINGS. MY PARTICIPATION IN THIS PROJECT MAY BE ENDED BY THE INVESTIGATOR FOR REASONS THAT WOULD BE EXPLAINED. NEW INFORMATION DEVELOPED DURING THE COURSE OF THIS STUDY WHICH MAY AFFECT MY WILLINGNESS TO CONTINUE IN THIS RESEARCH PROJECT WILL BE GIVEN TO ME AS IT BECOMES AVAILABLE. THIS CONSENT FORM WILL BE FILED IN AN AREA DESIGNATED BY THE HUMAN SUBJECTS COMMITTEE WITH ACCESS RESTRICTED TO THE PRINCIPAL INVESTIGATOR, DANIEL JOHNSON, OR AUTHORIZED REPRESENTATIVE OF THE MUSIC DEPARTMENT. I DO NOT GIVE UP ANY OF MY LEGAL RIGHTS BY SIGNING THIS FORM. A COPY OF THIS SIGNED CONSENT FORM WILL BE GIVEN TO ME.

Signature of Subject ___________________________ Date __________

Check here if you would like to receive a copy of the results of this study upon completion.

INVESTIGATOR’S AFFIDAVIT
I have carefully explained to the subject the nature of the above project. I hereby certify that to the best of my knowledge the person who is signing this consent form understands clearly the nature, demands, benefits, and risks involved in his/her participation and his/her signature is legally valid. A language or educational barrier has not precluded this understanding.

Signature of Investigator ___________________________ Date __________
Dear Parents,

My name is Dan Johnson. I am completing a doctoral degree in Music Education at the University of Arizona. My research interest is critical thinking instruction and music listening skills. I am investigating activities which will aid the students in more intelligent listening. I hope to show that critical thinking instruction is a more effective method for teaching music listening skills than ordinary listening activities or no listening instruction at all.

Your child, along with the other members of his or her fifth grade class, has been selected to participate in my study. This project has been approved by the University of Arizona Human Subjects Committee, my advisor, Dr. Ebie, the Catalina Foothills School District, Mrs. Nichols, and your child's music teacher.

Your child may be in the group receiving critical thinking instruction, in the group receiving activity-based instruction, or in a group not directly affected by the instruction. In any case, the instruction will be nothing unusual and will not bring any increased risks to your child. The instruction in music listening will take place during your child's normal music classes, over a period of seven weeks from April 7 through May 16. The music instruction will be provided by your child's music teacher, Ms. Robi Thomure.

At the beginning and end of the study, your child will complete two music listening tests during the normal school day. The results of these tests will be compared to another test given at the completion of the study. During the entire study, your child will remain anonymous. All test scores will be identified with a code, not by your child's name.

Participation in this study is voluntary. If you would like your child to participate in this study, you must sign and return the attached Parental Consent form. Your child must also agree by signing and returning the Minor Assent form. Both forms are due by March 21.

Thank you for your review of the enclosed forms and your cooperation with this study. Should you have any questions, please contact me or my advisor via e-mail or phone:

Dan Johnson
520/626-8498
dcj@email.arizona.edu

Dr. Brian Ebie
520/621-7470
ebie@email.arizona.edu

School of Music and Dance, University of Arizona
Room 102, Music Building
520/626-8498, dcj@email.arizona.edu
LISTENING AND THINKING

What Do You Think
When You Listen to Music?

Name: __________________________

Date: __________________________
1. Where might you hear this music?
   a) at a funeral
   b) for a lullaby
   c) at a parade
   d) at a dance

   What did you hear in the music that helped you make your choice?

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. How many instruments do you hear in this music?
   a) only one
   b) two
   c) three
   d) more than three

   How would you describe the instruments you hear in this music?

   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
3 Where might you hear this music?
   a) at a rock concert
   b) for a lullaby
   c) at a dance
   d) at a church or temple

What did you hear in the music that helped you make your choice?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4 How many instruments do you hear in this music?
   a) only one
   b) two
   c) three
   d) more than three

How would you describe the instruments you hear in this music?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. What is different about these two pieces of music?
   a) the speed of the music
   b) the style of the music
   c) the instruments used to make the music
   d) all of the above

What did you hear in the music that helped you make your choice?

6. How do these two pieces of music compare?
   a) They are almost the same.
   b) They are a little the same.
   c) They are a little different.
   d) They are very different.

What did you hear in the music that helped you make your choice?
7. Where might you hear this music?
   a) at a funeral
   b) for a lullaby
   c) at a parade
   d) at a dance

   What did you hear in the music that helped you make your choice?
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________

8. How many instruments do you hear in this music?
   a) only one
   b) two
   c) three
   d) more than three

   How would you describe the instruments you hear in this music?
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
9 Where might you hear this music?
   a) at a rock concert
   b) for a lullaby
   c) at a dance
   d) at a church or temple

What did you hear in the music that helped you make your choice?

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

10 How many instruments do you hear in this music?
   a) only one
   b) two
   c) three
   d) more than three

How would you describe the instruments you hear in this music?

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
11 What is different about these two pieces of music?
   a) the speed of the music
   b) the style of the music
   c) the instruments used to make the music
   d) all of the above

What did you hear in the music that helped you make your choice?

12 How do these two pieces of music compare?
   a) They are almost the same.
   b) They are a little the same.
   c) They are a little different.
   d) They are very different.

What did you hear in the music that helped you make your choice?
MUSICAL EXAMPLES

The following musical examples were used for “Listening and Thinking” during a pilot study as well as for the pretest and posttest.


Directions for Test Administrator

Have the students seated at a desk with a pencil (or pen).

Say: "We're going to listen to some music today, and I want you to think about what
you're hearing while you listen. To help you get some ideas about the music, here is a sheet
asking you about what you hear. It's IMPORTANT that you not talk out during the
listening because I want to know YOUR IDEAS, not the ones you hear from someone else.
If you have a question, just raise your hand, and I'll answer it for you."

Pass out the test booklets and have them write their name and the date on the cover.

Say: "The music you hear may be used for different reasons or in different places. In the
music, you may hear some instruments. Read the first two questions with me."

Read the first two questions.

Say: "I'll play the first piece of music twice. You may begin answering the first two
questions when you hear the music. Does anyone have any questions before you hear the
first piece of music?" Answer students' questions as necessary.

Play the first example.

Say: "Finish answering the first two questions while I play that example again."

Play the first example again.

Ask: "Does anyone need more time for the first two questions?" Wait as necessary.

Say: "Questions three and four on the next page are the same as the first two questions, but
now we'll listen to a different piece of music. I'll play the second piece of music twice. You
may begin answering questions three and four when you hear the music. Does anyone have
any questions?” Answer students’ questions as necessary.
Play the second example.

Say: “Finish answering questions three and four while I play that example again.”
Play the second example again.

Ask: “Does anyone need more time for the third and fourth questions?” Wait as necessary.
Say: “Now, on the next page, there are two different questions. Read questions five and six with me.”
Read questions five and six.

Say: “I’ll play the first and second examples once again. You may begin answering questions five and six when you hear the music. Does anyone have any questions before you hear the music?” Answer students’ questions as necessary.
Play the first example followed by the second example.

Ask: “Does anyone need more time for questions five and six?” Wait as necessary.
Say: “Now, we are going to listen to a different piece of music. Questions seven and eight are like questions one and two. Think about the purpose this music might have and the instruments you hear. Read questions seven and eight with me.”
Read questions seven and eight.

Say: “I’ll play the next piece of music twice. You may begin answering questions seven and eight when you hear the music. Does anyone have any questions before you hear this piece of music?” Answer students’ questions as necessary.
Play the third example.
Say: “Finish answering questions seven and eight while I play that example again.” Play the third example again.

Ask: “Does anyone need more time for the those questions?” Wait as necessary.

Say: “Questions nine and ten on the next page are the same as questions seven and eight, but now we’ll listen to a different piece of music. I’ll play the next piece of music twice. You may begin answering questions nine and ten when you hear the music. Does anyone have any questions?” Answer students’ questions as necessary.

Play the fourth example.

Say: “Finish answering questions nine and ten while I play that example again.”

Play the fourth example again.

Ask: “Does anyone need more time for questions nine and ten?” Wait as necessary.

Say: “Now, on the next page, there are two different questions like before. Read questions eleven and twelve with me.”

Read questions eleven and twelve.

Say: “I’ll play the third and fourth examples once again. You may begin answering questions eleven and twelve when you hear the music. Does anyone have any questions before you hear the music?” Answer students’ questions as necessary.

Play the third example followed by the fourth example.

Ask: “Does anyone need more time for questions eleven and twelve?” Wait as necessary.
APPENDIX C

Activity-Based Instruction (ABI) and Critical Thinking Instruction (CTI) Lesson Plans

OVERVIEW

Lesson Concepts
Lesson 1: Steady Beat and Tempo
Lesson 2: Melodic Motion and Shapes
Lesson 3: Accents and Volume
Lesson 4: Form in Music

Lesson 5: Rhythmic Subdivision
Lesson 6: Melodic Phrases
Lesson 7: Instrumental Timbres
Lesson 8: Form in Music

Lesson 9: Rhythmic Patterns and Beat Subdivision
Lesson 10: Cadences
Lesson 11: Instrumental Range and Register
Lesson 12: Form in Music

Lesson 13: Steady beat and meter
Lesson 14: Melodic Phrases
Lesson 15: Instrumental Timbres
Lesson 16: Form in Music
LESSON PLANS

To the teacher: Use the list of directions in the left-hand column to teach these lessons as Activity-Based Instruction (ABI), and the list of directions in the right-hand column to teach these lessons as Critical Thinking Instruction (CTI).

Lesson 1
Steady Beat and Tempo

ABI Objectives: Students will listen to the recorded music, mirror the teacher’s demonstrated body percussion patterns, and transfer those rhythmic patterns to non-pitched wooden percussion instruments using a steady beat and constant tempo.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe the steady beat and constant tempo in the recorded music, improvise their own body percussion patterns, evaluate their own improvised patterns, compare their own patterns with patterns improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Bizet’s “Prelude” from Carmen, and a variety of non-pitched, wooden classroom percussion instruments.
<table>
<thead>
<tr>
<th><strong>Activity-Based Instruction (ABI)</strong></th>
<th><strong>Critical Thinking Instruction (CTI)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the recording and tell students to listen for the steady beat in the music.</td>
<td>Play the recording and tell students to listen for the steady beat in the music.</td>
</tr>
<tr>
<td>1a Ask the students: How would you describe the beat of this music? How would you show it?</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that this music has a “steady beat” with a regular, rhythmic pulse.</td>
<td>Tell the students that this music has a “steady beat” with a regular, rhythmic pulse.</td>
</tr>
<tr>
<td>2a Ask the students: What is the speed of this piece? How do you know? How does it change? How would you show it?</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong> Tell the students that the speed of a piece of music is called “tempo,” and that in this piece the tempo does not change.</td>
<td>Tell the students that the speed of a piece of music is called “tempo,” and that in this piece the tempo does not change.</td>
</tr>
<tr>
<td><strong>4</strong> Play the recording again and demonstrate body percussion patterns with a steady beat (e.g. patch, clap, snap, clap). Change the body percussion pattern as desired. Have the students join you as your mirror.</td>
<td>Play the recording again and demonstrate body percussion patterns with a steady beat (e.g. patch, clap, snap, clap). Change the body percussion pattern as desired. Have the students join you as your mirror.</td>
</tr>
<tr>
<td><strong>5</strong> Play the recording again and use different body percussion patterns. Change the pattern as desired. Have the students join you as your mirror.</td>
<td>Play the recording again and have the students improvise their own body percussion patterns. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
<tr>
<td>5a Ask the students: How would you describe the body percussion patterns you improvised? How well did your patterns fit with the steady beat you heard in the music? How did you know? How did your movement patterns change? How did your patterns compare with patterns other students improvised? How might you change your pattern? Why?</td>
<td></td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5 Tell students that the body percussion patterns went along with the steady beat in the music, and that the tempo of the music was the same as the tempo of the body percussion patterns even though the movement patterns changed.</td>
<td>Tell students that the body percussion patterns went along with the steady beat in the music, and that the tempo of the music was the same as the tempo of the body percussion patterns even though the movement patterns changed.</td>
</tr>
<tr>
<td>7 <strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student and instruct them to practice playing the demonstrated body percussion patterns on their instruments.</td>
<td><strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student and instruct them to practice playing the demonstrated as well as their own improvised body percussion patterns on their instruments.</td>
</tr>
<tr>
<td>8 <strong>Play</strong> the recording again and lead the students by playing patterns on a non-pitched wooden percussion instrument. Have the students play a non-pitched, wooden percussion instrument along with your patterns with a steady beat in a constant tempo.</td>
<td><strong>Play</strong> the recording again, have the students play their improvised body percussion patterns with a non-pitched, wooden percussion instrument along with a steady beat in a constant tempo. Pause the recording and invite students to take turns leading the class and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 2

Melodic Motion and Shapes

ABI Objectives: Students will listen to the recording, mirror the teacher's demonstrated movements that outline conjunct and disjunct melodic contour while using a flag.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe melodic shapes and contours in the recorded music, improvise movement to show melodic contours, evaluate their own improvised motions, compare their own motions with motions improvised by other students, and answer in response to the teacher's questions.

Materials: A recording of Bizet's "Prelude" from Carmen, and a flag for each student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 <strong>Play</strong> the recording and tell students to listen for the direction of the melody.</td>
<td><strong>Play</strong> the recording and tell students to listen for the direction of the melody.</td>
</tr>
<tr>
<td>1a <strong>Ask</strong> the students: How would you describe the melody? How would you show it?</td>
<td><strong>Ask</strong> the students: How would you describe the melody? How would you show it?</td>
</tr>
<tr>
<td>2 <strong>Tell</strong> the students that this music has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same note.</td>
<td><strong>Tell</strong> the students that this music has a melody that sometimes goes up, sometimes goes down, and sometimes repeats the same note.</td>
</tr>
<tr>
<td>3 <strong>Demonstrate</strong> the shape of the melody by moving a flag.</td>
<td><strong>Demonstrate</strong> the shape of the melody by moving a flag.</td>
</tr>
<tr>
<td>4 <strong>Distribute</strong> a flag to each student, <strong>play</strong> the recording again, and have the students mirror your movements.</td>
<td><strong>Distribute</strong> a flag to each student, <strong>play</strong> the recording again, and have the students mirror your movements.</td>
</tr>
<tr>
<td>5 <strong>Play</strong> the recording again, use the other hand to show the melodic contour, and have the students mirror your movements.</td>
<td><strong>Play</strong> the recording again, have the students improvise their own motions using a flag to show the melodic contour.</td>
</tr>
<tr>
<td>5a <strong>Ask</strong> the students: How well did your motions show the melody? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
<td><strong>Ask</strong> the students: How well did your motions show the melody? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
</tr>
<tr>
<td>6 <strong>Tell</strong> students that melodies have lines and shapes that either go up or &quot;ascend,&quot; go down or &quot;descend,&quot; or repeat the same pitch. Explain that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes.</td>
<td><strong>Tell</strong> students that melodies have lines and shapes that either go up or &quot;ascend,&quot; go down or &quot;descend,&quot; or repeat the same pitch. Explain that melodies sometimes move by step to notes close by, sometimes move by leap to notes further away, and sometimes repeat the same notes.</td>
</tr>
<tr>
<td>7 <strong>Play</strong> the recording again and have the students mirror your motions as you show how the melody moves up and down, and by leap or step using a flag.</td>
<td><strong>Play</strong> the recording again and have the students show how the melody moves up and down, and by leap or step with their flag. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 3

Accents and Volume

ABI Objectives: Students will listen to the recording and mirror the teacher's demonstrated conducting movements that reflect changes in volume and accents using a conductor's baton while listening to the recording.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe changes in volume and accents in the recorded music, improvise conducting motions in response to changes in volume and accents in the musical example, and answer in response to the teacher's questions.

Materials: A recording of Bizet's "Prelude" from Carmen, and a conductor's baton for each student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Play the recording and tell students to listen for places where the music is louder and softer.</td>
<td>Play the recording and tell students to listen for places where the music is louder and softer.</td>
</tr>
<tr>
<td>1a</td>
<td>Ask the students: What did you notice about the loudness or volume of the music? When did some notes “stand out” of the music? Describe what you heard.</td>
</tr>
<tr>
<td>2 Tell the students that there are differences in the loudness or volume in this music. These changes in volume are called “dynamics.”</td>
<td>Tell the students that there are differences in the loudness or volume in this music. These changes in volume are called “dynamics.”</td>
</tr>
<tr>
<td>3 Tell the students that when orchestras or bands play, usually a conductor directs the musicians and makes different movements or movement patterns to show the volume of the music. With a baton, demonstrate these movements.</td>
<td>Tell the students that when orchestras or bands play, usually a conductor directs the musicians and makes different movements or movement patterns to show the volume of the music. With a baton, demonstrate these movements.</td>
</tr>
<tr>
<td>4 Distribute a conductor’s baton to each student. Play the recording again while demonstrating a conducting pattern. Have the students follow your conducting motions.</td>
<td>Distribute a conductor’s baton to each student. Play the recording again while demonstrating a conducting pattern. Have the students follow your conducting motions.</td>
</tr>
<tr>
<td>5 Play the recording again, using different conducting motions to show the dynamics, and have the students follow you as your mirror.</td>
<td>Play the recording again, and have the students improvise their own conducting motions to show the dynamics.</td>
</tr>
<tr>
<td>5a</td>
<td>Ask the students: How did the volume of this music change? How did you show that in your conducting? How did you show notes that “stood out” in your conducting?</td>
</tr>
<tr>
<td>6 Tell students that in music, dynamics can change gradually or suddenly. When the music gets quieter, it is called a “decrescendo” and when it gets louder, it is called a “crescendo.” Sudden loud notes are called “accents.”</td>
<td>Tell students that in music, dynamics can change gradually or suddenly. When the music gets quieter, it is called a “decrescendo” and when it gets louder, it is called a “crescendo.” Sudden loud notes are called “accents.”</td>
</tr>
<tr>
<td>7 Play the recording again and have the students follow your motions to show gradual and sudden changes in volume and accents with their baton.</td>
<td>Play the recording again and have the students make up their own conducting motions to show how the volume changes with their baton. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 4
Form in Music

ABI Objectives: Students will listen to the recording, copy the teacher's illustrations that demonstrate the melodic contour, and trace the music map while listening to the recording.

CTI Objectives: Students will listen to the recording, recognize and describe changes in the recorded music, create their own music maps to represent the five different sections of the musical example, evaluate their own and other students' maps of the same music, compare and contrast different representations of the musical form, and answer in response to the teacher's questions.

Materials: A recording of Bizet's "Prelude" from Carmen, a large tablet or writing board with markers, one marker per student, and a piece of drawing paper per student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 <strong>Tell</strong> the students that music is often made up of sections. <strong>Play</strong> the recording and tell the students to listen for changes that might indicate a new or different section.</td>
<td><strong>Tell</strong> the students that music is often made up of sections. <strong>Play</strong> the recording and tell the students to listen for changes that might indicate a new or different section.</td>
</tr>
<tr>
<td>1a <strong>Ask</strong> the students: How did the music change? How many times did the music change? How did you know it changed? Describe what you heard. What might this music be used for? Where might you hear this music? What do you imagine is happening when you hear this music?</td>
<td><strong>Tell</strong> the students that when composers write music, they often have a purpose and a plan. <strong>Tell</strong> the students that this music is a march. Explain that in this music, the composer starts with one part or section; this section is called “Section A” because it is the first part of the piece.</td>
</tr>
<tr>
<td>2 <strong>Tell</strong> the students that when composers write music, they often have a purpose and a plan. <strong>Tell</strong> the students that this music is a march. Explain that in this music, the composer starts with one part or section; this section is called “Section A” because it is the first part of the piece.</td>
<td><strong>Tell</strong> the students that when composers write music, they often have a purpose and a plan. <strong>Tell</strong> the students that this music is a march. Explain that in this music, the composer starts with one part or section; this section is called “Section A” because it is the first part of the piece.</td>
</tr>
<tr>
<td>3 On a large writing tablet or board, draw five boxes. <strong>Play</strong> the first section of the recording and draw a map of the music in section A (i.e. the first box) using melodic contours and shapes as in lesson 2. Have the students trace your map in the air while you draw on the board or tablet.</td>
<td>On a large writing tablet or board, draw five boxes. <strong>Play</strong> the first section of the recording and draw a map of the music in section A (i.e. the first box) using melodic contours and shapes as in lesson 2. Have the students trace your map in the air while you draw on the board or tablet.</td>
</tr>
<tr>
<td>4 <strong>Distribute</strong> a marker and a sheet of drawing paper to each student. <strong>Play</strong> the first section of the recording again and have the students copy your map of the music in the first box as it plays.</td>
<td><strong>Distribute</strong> a marker and a sheet of drawing paper to each student. <strong>Play</strong> the first section of the recording again and have the students create their own maps of the music in the first box.</td>
</tr>
<tr>
<td>5 <strong>Tell</strong> the students that the second section of the music is different from the first, so the second box on their paper should be different from the first box.</td>
<td><strong>Ask</strong> the students to listen to the second section of the recording with the following questions in mind: How would you describe the second part of the music in words? How does the second section of the music compare with the first section?</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td><strong>6</strong> Play the second section of the recording and map it in the second box as you did in the first box. Have the students copy your map on their paper.</td>
<td>Play the second section of the recording and have the students create their own maps of the second section in the second box on their paper.</td>
</tr>
<tr>
<td><strong>7</strong> Tell the students that the third section of the music is the same as the first, so the third box on their paper should be the same as the first box.</td>
<td>Ask the students to listen to the third section of the recording with the following questions in mind: How would you describe the third section of the music in words? How does the third section of the music compare with the other sections?</td>
</tr>
<tr>
<td><strong>8</strong> Play the third section of the recording, and map it in the third box as you did in the first box. Have the students copy your map on their paper.</td>
<td>Play the third section of the recording, and have the students create their own maps of the third section in the third box on their paper.</td>
</tr>
<tr>
<td><strong>9</strong> Tell the students that the fourth section of the music is different from the first, so the fourth box on their paper should be different from the other boxes.</td>
<td>Ask the students to listen to the fourth section of the recording with the following questions in mind: How would you describe the fourth section of the music in words? How does this section of the music compare with the other sections of the music?</td>
</tr>
<tr>
<td><strong>10</strong> Play the fourth section of the recording, and map it in the fourth box as you did in the first box. Have the students copy your map on their paper.</td>
<td>Play the fourth section of the recording, and have the students create their own maps of the fourth section in the fourth box on their paper.</td>
</tr>
<tr>
<td><strong>11</strong> Tell the students that the fifth section of the music is the same as the first and third sections, so the fifth box on their paper should be the same as the first and third boxes.</td>
<td>Ask the students to listen to the fifth section of the recording with the following questions in mind: How would you describe the fifth section of the music in words? How does this section of the music compare with the other sections of the music?</td>
</tr>
<tr>
<td><strong>12</strong> Play the fifth section of the music, and map it in the fifth box as you did in the first box. Have the students copy your map on their paper.</td>
<td>Play the fifth section of the music, and have the students create their own maps of the fifth section in the fifth box on their paper.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>12a Have the students to look at their maps of the music and share them with another student or students. Ask the students: What do you notice about your map of the music? How did it compare with another student’s map? What in the music helped you draw your map? How does it show the music? How well does your map show the music? What grade would you give your own map? Why? How could you improve it?</td>
<td></td>
</tr>
<tr>
<td>13 Tell the students that the overall plan or form for this piece is A B A C A because the first, third, and fifth sections are the same, while the second and fourth sections are different from the first section and also different from each other. Explain that this is called a “Rondo” form in music.</td>
<td>Tell the students that the overall plan or form for this piece is A B A C A because the first, third, and fifth sections are the same, while the second and fourth sections are different from the first section and also different from each other. Explain that this is called a “Rondo” form in music.</td>
</tr>
<tr>
<td>14 Play the entire recording again and trace your map on the board or tablet. Have the students trace their maps with their finger or marker while the music plays.</td>
<td>Play the entire recording again and have the students trace their own maps with their finger or marker while the music plays.</td>
</tr>
</tbody>
</table>
Lesson 5

Rhythmic Subdivision

ABI Objectives: Students will listen to the recording, mirror demonstrated body percussion patterns using rhythmic subdivisions, and transfer those rhythms to non-pitched, wooden percussion instruments.

CTI Objectives: In addition to the ABI objectives, students will improvise their own rhythmic patterns, recognize rhythmic subdivisions in the musical example, evaluate their own improvised patterns, compare their own patterns with patterns improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Slomovits, Slomovits, and Weikart's “Arkansas Traveler/Sailor's Hornpipe/Turkey in the Straw,” and a variety of non-pitched wooden classroom percussion instruments.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the first section of the recording and tell students to listen for how many notes are played in each beat.</td>
<td>Play the first section of the recording and tell students to listen for how many notes are played in each beat.</td>
</tr>
<tr>
<td><strong>1a</strong> Ask the students: How would you describe the beat of this music? What do you notice about the beat you hear? How would you show it?</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that this music has a regular, rhythmic pulse as did the music from previous lessons.</td>
<td>Tell the students that this music has a regular, rhythmic pulse as did the music from previous lessons.</td>
</tr>
<tr>
<td><strong>2a</strong> Ask the students: What is the speed of this piece? How do you know? How does the speed of the notes change? How would you show it?</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong> Tell the students that the speed or “tempo” of the piece is constant, and that the beat is subdivided into many shorter pulses or notes.</td>
<td>Tell the students that the speed or “tempo” of the piece is constant, and that the beat is subdivided into many shorter pulses or notes.</td>
</tr>
<tr>
<td><strong>4</strong> Play the first section of the recording again and demonstrate body percussion patterns using the quarter-note pulse. Have the students join you as your mirror.</td>
<td>Play the first section of the recording again and demonstrate body percussion patterns using the quarter-note pulse. Have the students join you as your mirror.</td>
</tr>
<tr>
<td><strong>5</strong> Play the first section of the recording again and demonstrate different body percussion patterns using the eighth-note and sixteenth-note pulse. Have the students join you as your mirror.</td>
<td>Play the first section of the recording again and demonstrate different body percussion patterns using the eighth-note and sixteenth-note pulse. Have the students join you as your mirror.</td>
</tr>
<tr>
<td><strong>5a</strong> Ask the students: How did the patterns I was using change? How did you know? How did my movements fit with the music? What else did you notice about the changing patterns? Describe them.</td>
<td></td>
</tr>
<tr>
<td><strong>Activity-Based Instruction (ABI)</strong></td>
<td><strong>Critical Thinking Instruction (CTI)</strong></td>
</tr>
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</tr>
<tr>
<td><strong>Tell</strong> students that the body percussion patterns went along with the steady beat in the music, and that the tempo of the music was the same as the tempo of the body percussion patterns.</td>
<td><strong>Tell</strong> students that the body percussion patterns went along with the steady beat in the music, and that the tempo of the music was the same as the tempo of the body percussion patterns.</td>
</tr>
<tr>
<td><strong>Play</strong> the first section of the recording again and demonstrate different body percussion patterns using quarter-note, eighth-note, and sixteenth-note subdivisions. Have the students mirror you.</td>
<td><strong>Play</strong> the first section of the recording again and have the students improvise their own body percussion patterns using quarter-note, eighth-note, and sixteenth-note subdivisions. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
<tr>
<td><strong>Tell</strong> the students that sometimes you used faster notes to subdivide the beat, but that you were still in time with the music.</td>
<td><strong>Tell</strong> the students that sometimes you used faster notes to subdivide the beat, but that you were still in time with the music.</td>
</tr>
<tr>
<td><strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student, and have the students practice playing the demonstrated body percussion patterns.</td>
<td><strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student, and have the students practice playing the demonstrated body percussion patterns.</td>
</tr>
<tr>
<td><strong>Play</strong> the first section of the recording again, lead the students in rhythm patterns, and have the students play a wooden non-pitched percussion instrument in a steady beat using quarter-note, eighth-note, and sixteenth-note subdivisions.</td>
<td><strong>Play</strong> the first section of the recording again, have the students play their improvised body percussion patterns with a non-pitched, wooden percussion instrument in a steady beat using quarter-note, eighth-note, and sixteenth-note subdivisions.</td>
</tr>
</tbody>
</table>
Lesson 6
Melodic Phrases

ABI Objectives: Students will listen to the recording, imitate the teacher's demonstrated movements in melodic phrases, and perform those movements with flags while listening to the recording.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe melodic shapes and contours by listening for phrases in the musical example, improvise movement to show melodic contours, evaluate their own improvised motions, compare their own motions with motions improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Slomovits, Slomovits, and Weikart’s “Arkansas Traveler/Sailor's Hornpipe/Turkey in the Straw,” and two flags for each student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the second section of the recording and tell students to listen for the melody and how it starts and stops.</td>
<td><strong>1</strong> Play the second section of the recording and tell students to listen for the melody and how it starts and stops.</td>
</tr>
<tr>
<td><strong>1a</strong> Ask the students: How would you describe the melody? Describe it. How would you show it? What are the parts that make up this melody? Describe them. How are they different from each other? How are they the same?</td>
<td><strong>1a</strong> Ask the students: How would you describe the melody? Describe it. How would you show it? What are the parts that make up this melody? Describe them. How are they different from each other? How are they the same?</td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that this music has a melody that is made up of phrases or musical thoughts.</td>
<td><strong>2</strong> Tell the students that this music has a melody that is made up of phrases or musical thoughts.</td>
</tr>
<tr>
<td><strong>3</strong> Demonstrate the melodic shapes and phrasing of the music using alternating hand motions one flag in each hand.</td>
<td><strong>3</strong> Demonstrate the melodic shapes and phrasing of the music using alternating hand motions one flag in each hand.</td>
</tr>
<tr>
<td><strong>4</strong> Distribute two flags to each student. Have the students hold one flag in each hand, <strong>play</strong> the second section of the recording again, and have the students mirror your movements using alternating hand motions.</td>
<td><strong>4</strong> Distribute two flags to each student. Have the students hold one flag in each hand, <strong>play</strong> the second section of the recording again, and have the students mirror your movements using alternating hand motions.</td>
</tr>
<tr>
<td><strong>5</strong> Play the recording again, use different movement patterns to show the melodic contour. Have the students mirror your movements using flags and alternating hand motions.</td>
<td><strong>5</strong> Play the recording again, use different movement patterns to show the melodic contour. Have the students mirror your movements using flags and alternating hand motions.</td>
</tr>
<tr>
<td><strong>5a</strong> Ask the students: How well did your motions show the melody? How many parts did your motions have? How did the parts fit together? What made them different? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
<td><strong>5a</strong> Ask the students: How well did your motions show the melody? How many parts did your motions have? How did the parts fit together? What made them different? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
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<tr>
<td><strong>6</strong> Tell students that melodies have lines and shapes and are made up of phrases. Explain that phrases are like musical thoughts that composers use to compose melodies.</td>
<td>Tell students that melodies have lines and shapes and are made up of phrases. Explain that phrases are like musical thoughts that composers use to compose melodies.</td>
</tr>
<tr>
<td><strong>7</strong> Play the second section of the recording again and have the students mirror your motions to show the phrasing and melodic contour of the melody with their flags using alternating hand motions.</td>
<td>Play the second section of the recording again and have the students show the phrasing and melodic contour of the melody with their flags using alternating hand motions. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 7
Instrumental Timbres

ABI Objectives: Students will listen to the recording, and mirror the teacher’s demonstrated movements while using colored flags.

CTI Objectives: In addition to the ABI objectives, students will describe different instrumental timbres in the musical example, demonstrate their understanding with teacher-directed and improvised movement using colored flags, and answer in response to the teacher’s questions.

Materials: A recording of Slomovits, Slomovits, and Weikart’s “Arkansas Traveler/Sailor’s Hornpipe/Turkey in the Straw,” and a set of multicolored flags.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
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<tbody>
<tr>
<td>1 <strong>Play</strong> the third section of the recording and tell students to listen for different instruments in the music.</td>
<td>Play the third section of the recording and tell students to listen for different instruments in the music.</td>
</tr>
<tr>
<td>1a Ask the students: What did you notice about the kinds of sounds the instruments made? What do you think the instruments were? How would you show they were playing? How were they different? How were they the same? Describe what you heard.</td>
<td></td>
</tr>
<tr>
<td>2 <strong>Tell</strong> the students that different instruments make different kinds of sounds. Explain that in this music, there are three different stringed instruments playing; they sound similar because they have similar sounds or “timbres,” but the bass, violin (fiddle), and banjo have different kinds of string sounds.</td>
<td><strong>Tell</strong> the students that different instruments make different kinds of sounds. Explain that in this music, there are three different stringed instruments playing; they sound similar because they have similar sounds or “timbres,” but the bass, violin (fiddle), and banjo have different kinds of string sounds.</td>
</tr>
<tr>
<td>3 <strong>Play</strong> the third section of the recording again, and using a colored flag demonstrate the violin (fiddle) line. Have the students listen for the violin (fiddle) and mirror your movements (without using flags).</td>
<td><strong>Play</strong> the third section of the recording again, and using a colored flag demonstrate the violin (fiddle) line. Have the students listen for the violin (fiddle) and mirror your movements (without using flags).</td>
</tr>
<tr>
<td>4 <strong>Distribute</strong> a flag to each student of the same color as you used (in step 3). <strong>Play</strong> the third section of the recording again, and have the students mirror your motions.</td>
<td><strong>Distribute</strong> a flag to each student of the same color as you used (in step 3), <strong>play</strong> the third section of the recording again, and have the students mirror your motions.</td>
</tr>
<tr>
<td>5 <strong>Play</strong> the third section of the recording again, and using a different colored flag, demonstrate the bass line. Have the students pick the same color flag as you used (in step 4); listen for the bass and mirror your movements.</td>
<td><strong>Play</strong> the third section of the recording again, and have the students pick a different instrument, a different colored flag, and improvise their own motions to show the line of that instrument.</td>
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<tr>
<td>6 <strong>Play</strong> the third section of the recording again, and using a different colored flag, demonstrate the banjo line. <strong>Distribute</strong> a flag of the same color you used to each student; have the students listen for the banjo and mirror your movements.</td>
<td><strong>Play</strong> the third section of the recording again, and have the students pick a different instrument, a different colored flag, and improvise their own motions to show the line of that instrument.</td>
</tr>
<tr>
<td>6a</td>
<td><strong>Ask</strong> the students: What was different about each of the instruments you heard? What was the same? How did the instruments fit together in the music? Describe what you heard.</td>
</tr>
<tr>
<td>7 <strong>Tell</strong> the students each of the three instruments fits in the music by playing its own part.</td>
<td><strong>Tell</strong> the students each of the three instruments fits in the music by playing its own part.</td>
</tr>
<tr>
<td>8 <strong>Play</strong> the third section of the recording again, and, using colored flags as before, demonstrate the three instrumental lines in sequence: violin (fiddle), bass, and then banjo. Have the students use flags of the same colors and mirror your movements.</td>
<td><strong>Play</strong> the third section of the recording again, and have the students use their colored flags as before to demonstrate their choice of instrumental line(s). Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 8
Form in Music

ABI Objectives: Students will listen to the recording, copy the teacher’s musical map, and trace the map while listening to the recording.

CTI Objectives: Students will listen to the recording, recognize and describe changes in the recorded music, create their own maps to represent the five different sections of the musical example, trace their maps while listening to the recording, evaluate their own and different maps of the same music, compare and contrast different representations of the musical form, and respond to the teacher’s questions.

Materials: A recording of Slomovits, Slomovits, and Weikart’s “Arkansas Traveler/Sailor’s Hornpipe/Turkey in the Straw,” a large writing tablet or white board with markers, one marker per student, and a piece of drawing paper per student.
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<th>Activity-Based Instruction (ABI)</th>
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<th>Critical Thinking Instruction (CTI)</th>
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<tr>
<td>Activity-Based Instruction (ABI)</td>
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</tbody>
</table>
| **7**  
Tell the students that the next section of the music is different from the first and second sections, so the third box on their paper should be different from the other two boxes. | Ask the students to listen to the third section of the recording with the following questions in mind: What do you hear in this music? What words would you use to describe it? How does it compare with the other sections of music? |
| **8**  
Play the third section of the recording, and map it in the third box. Have the students copy your map on their sheets. | Play the third section of the recording and have the students create their own maps of the third section in the third box on their paper |
| **8a**  
Have the students to look at their maps of the music and share them with another student or students. Ask the students: What do you notice about your map of the music? How did it compare with another map? What in the music helped you draw your map? How does it show the music? How well does your map show the music? What grade would you give your own map? Why? How could you improve it? | |
| **9**  
Tell the students that the overall plan or form for this piece is A B C because there are three tunes or sections in this piece and each section is different from the others. | Tell the students that the overall plan or form for this piece is A B C because there are three tunes or sections in this piece and each section is different from the others. |
| **9a**  
Ask the students: How does this piece compare with the first piece of music (heard in previous lessons)? What makes them the same? What makes them different? How do the maps or forms of the two pieces of music compare? Why do think they might be different? | |
| **10**  
Tell the students that this form is less complicated than the form from of the first piece of music (heard in previous lessons). Explain that different kinds of music have different forms and different musical maps. | Tell the students that this form is less complicated than the form from of the first piece (heard in previous lessons). Explain that different kinds of music have different forms and different musical maps. |
| **11**  
Play the entire recording again and trace your map on the board or tablet. At the same time, have the students trace their maps with their finger or marker while the music plays. | Play the entire recording again and have the students trace their own maps with their finger or marker while the music plays. |
Lesson 9

Rhythmic Patterns

ABI Objectives: Students will listen to the recording, mirror demonstrated body percussion patterns, transfer those rhythms to non-pitched metal and wooden percussion instruments, and play those rhythmic patterns while listening to the recording.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe rhythmic patterns in the musical example, improvise their own rhythmic patterns, evaluate their own improvised patterns, compare their own patterns with patterns improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Story’s “Pavane,” a variety of non-pitched wooden and metal classroom percussion instruments
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> <strong>Play</strong> the first section of the recording and tell students to listen for two different rhythms in the music.</td>
<td><strong>Play</strong> the first section of the recording and tell students to listen for two different rhythms in the music.</td>
</tr>
<tr>
<td><strong>1a</strong> <strong>Tell</strong> the students that this music has long, sustained notes in the treble (higher) range and a regular, rhythmic pulse in the bass (lower) range. Explain that the regular rhythmic pattern in the bass is repeated over and over and is called an “ostinato.”</td>
<td><strong>Ask</strong> the students: What different kinds of rhythm did you hear? Describe the rhythms you heard. What was different about the rhythms you heard? What was the same about them? Describe them. How would you show them?</td>
</tr>
<tr>
<td><strong>2</strong> <strong>Tell</strong> the students that the beat in the piece is steady, but the melody does not show the beat as clearly because it is playing longer sustained notes.</td>
<td><strong>Tell</strong> the students that this music has long, sustained notes in the treble (higher) range and a regular, rhythmic pulse in the bass (lower) range. Explain that the regular rhythmic pattern in the bass is repeated over and over and is called an “ostinato.”</td>
</tr>
<tr>
<td><strong>2a</strong></td>
<td><strong>Ask</strong> students: What do you notice about the beat of this piece? How do you know? What makes some notes different than other notes? Describe it. How would you show it?</td>
</tr>
<tr>
<td><strong>3</strong> <strong>Tell</strong> the students that the beat in the piece is steady, but the melody does not show the beat as clearly because it is playing longer sustained notes.</td>
<td><strong>Tell</strong> the students that the beat in the piece is steady, but the melody does not show the beat as clearly because it is playing longer sustained notes.</td>
</tr>
<tr>
<td><strong>4</strong> <strong>Play</strong> the first section of the recording again and demonstrate body percussion patterns using the quarter-note and eighth-note patterns in the bass. Have the students join you as your mirror.</td>
<td><strong>Play</strong> the first section of the recording again and demonstrate body percussion patterns using the quarter-note and eighth-note patterns in the bass. Have the students join you as your mirror.</td>
</tr>
<tr>
<td><strong>5</strong> <strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student and demonstrate the body percussion patterns on an instrument. <strong>Play</strong> the first section of the recording again, and have the students practice playing the demonstrated body percussion patterns along with you. <strong>Collect</strong> or put aside the wooden percussion instruments at the conclusion of this activity.</td>
<td><strong>Distribute</strong> a non-pitched, wooden percussion instrument to each student and demonstrate the body percussion patterns on an instrument. <strong>Play</strong> the first section of the recording again, and have the students practice improvising their own patterns while playing a wooden percussion instrument. Pause the recording, invite students to take turns leading the class with their improvised patterns, and resume the recording. <strong>Collect</strong> or put aside the wooden percussion instruments.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
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<tr>
<td><img src="image" alt="Play the first section of the recording again and demonstrate body percussion patterns using the sustained notes in the melody. Have the students join you as your mirror." /></td>
<td><img src="image" alt="Play the first section of the recording again and demonstrate body percussion patterns using the sustained notes in the melody. Have the students join you as your mirror." /></td>
</tr>
<tr>
<td><img src="image" alt="Distribute a non-pitched, metal percussion instrument and transfer the body percussion patterns to an instrument. Play the first section of the recording again, and have the students practice playing the demonstrated body percussion patterns along with you. Collect or put aside the metal percussion instruments." /></td>
<td><img src="image" alt="Distribute a non-pitched, metal percussion instrument and transfer the body percussion patterns to an instrument. Play the first section of the recording again, and have the students practice improvising their own patterns while playing a metal percussion instrument. Pause the recording, invite students to take turns leading the class with their improvised patterns, and resume the recording. Collect or put aside the metal percussion instruments." /></td>
</tr>
<tr>
<td><img src="image" alt="Ask the students: Why did the two kinds of patterns sound different? What was different about the two kinds of rhythm? What was the same about the two kinds of rhythm? How did the two parts relate to each other? How did your patterns compare with patterns other students improvised? How might you change your pattern? Why?" /></td>
<td><img src="image" alt="Tell students that the two different body percussion patterns went along with the steady beat and the sustained notes in the music. Explain that both parts still work together in time with the music." /></td>
</tr>
<tr>
<td><img src="image" alt="Tell students that the two different body percussion patterns went along with the steady beat and the sustained notes in the music. Explain that both parts still work together in time with the music." /></td>
<td><img src="image" alt="Play the first section of the recording again and have the students use movement by improvising body percussion patterns to show both the rhythmic pulse in the bass alternating with the longer sustained notes in the melody. Pause the recording, invite students to take turns leading the class, and resume the recording." /></td>
</tr>
<tr>
<td><img src="image" alt="Distribute one wooden and one metal non-pitched percussion instrument to each student. Play the first section of the recording again and alternate playing a wooden and a metal non-pitched percussion instrument using the rhythmic pulse in the bass alternating with the longer sustained notes in the melody. Have the students play along with you." /></td>
<td><img src="image" alt="Distribute one wooden and one metal non-pitched percussion instrument to each student. Play the first section of the recording again and have the students use metal and wooden non-pitched percussion patterns to show both the rhythmic pulse in the bass alternating with the longer sustained notes in the melody. Pause the recording, invite students to take turns leading the class, and resume the recording." /></td>
</tr>
</tbody>
</table>
Lesson 10
Cadences

ABI Objectives: Students will listen to the recording, and mirror the teacher’s demonstrated movements while using flags.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe cadences in the recording, demonstrate their understanding with teacher-directed and improvised movement using colored flags, and answer in response to the teacher’s questions.

Materials: A recording of Story’s “Pavane,” and two flags per student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  <strong>Play</strong> the first and second sections of the recording and tell students to listen for points when the music seems to &quot;pause.&quot;</td>
<td><strong>Play</strong> the first and second sections of the recording and tell students to listen for points when the music seems to &quot;pause.&quot;</td>
</tr>
<tr>
<td>1a  <strong>Ask</strong> the students: When does the music seem to pause? How do you know? Why do you think the music stops? What do you hear between the stopping points? Describe them. How would you draw the way the music starts and stops?</td>
<td><strong>Tell</strong> the students that this music has a melody that is made up of phrases or musical thoughts that are separated by &quot;cadences&quot; or stopping points in the music.</td>
</tr>
<tr>
<td>2  <strong>Tell</strong> the students that this music has a melody that is made up of phrases or musical thoughts that are separated by &quot;cadences&quot; or stopping points in the music.</td>
<td><strong>Tell</strong> the students that this music has a melody that is made up of phrases or musical thoughts that are separated by &quot;cadences&quot; or stopping points in the music.</td>
</tr>
<tr>
<td>3  <strong>Demonstrate</strong> the melodic shapes and phrasing with a flag. Using long, connected lines, illustrate the sustained melodic line. Stop your motion at each cadence.</td>
<td><strong>Demonstrate</strong> the melodic shapes and phrasing with a flag. Using long, connected lines, illustrate the sustained melodic line. Stop your motion at each cadence.</td>
</tr>
<tr>
<td>4  <strong>Distribute</strong> a flag to each student, <strong>play</strong> the first and second sections of the recording again, and have the students mirror your motions with a flag.</td>
<td><strong>Distribute</strong> a flag to each student, <strong>play</strong> the first and second sections of the recording again, and have the students mirror your motions with a flag.</td>
</tr>
<tr>
<td>5  <strong>Play</strong> the first and second sections of the recording again, and demonstrate the music in the same way using slightly different motions. <strong>Have</strong> the students mirror your motions.</td>
<td><strong>Play</strong> the first and second sections of the recording again, and have the students make up their own motions to show the music.</td>
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<td><strong>Activity-Based Instruction (ABI)</strong></td>
<td><strong>Critical Thinking Instruction (CTI)</strong></td>
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<tr>
<td>5a Ask the students: How did the music change from phrase to phrase? How was the music organized or put together? How did you show the musical ideas? Describe them. How were your movements different from another student’s movements? How were they the same? How well did your movements go with the music? How could you improve them?</td>
<td></td>
</tr>
<tr>
<td>6 Tell students that composers sometimes write pauses or cadences into their music to help organize the musical phrases.</td>
<td></td>
</tr>
<tr>
<td>7 Distribute another flag to each student. <strong>Play</strong> the first and second sections of the recording again, and demonstrate the music in the same way using different motions. Have the students mirror your movements.</td>
<td>Distribute another flag to each student. <strong>Play</strong> the first and second sections of the recording again and have the students demonstrate the music using different motions.</td>
</tr>
</tbody>
</table>
Lesson 11

Instrumental Range and Register

**ABI Objectives:** Students will listen to the recording, imitate the teacher's demonstrated movements to show changes in range while using colored flags.

**CTI Objectives:** In addition to the ABI objectives, the students will recognize and describe changes in instrumental range, demonstrate their understanding with teacher-directed and improvised movement using colored flags, and answer in response to the teacher's questions.

**Materials:** A recording of Story's "Pavane," and two flags per student.
<table>
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<tr>
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<tr>
<td><strong>1</strong> <strong>Tell</strong> the students to listen for changes between the first and second sections of the music. <strong>Play</strong> the first section of the recording, pause the CD momentarily, then continue playing the second section of the recording.</td>
<td><strong>Tell</strong> the students to listen for changes between the first and second sections of the music. <strong>Play</strong> the first section of the recording, pause the CD momentarily, then continue playing the second section of the recording.</td>
</tr>
<tr>
<td><strong>1a</strong> <strong>Ask</strong> the students: What was different between the first and second sections of the music? How would you show the difference between the sections? What was the same in both sections? Describe the two sections. How do you think the musicians played it to sound differently? Why do you think they played differently in the two sections?</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> <strong>Tell</strong> the students that the melody is played an octave higher in the second section than the first section. Even though the notes sound similar, they are in a different range, also called a different “register” in music.</td>
<td><strong>Tell</strong> the students that the melody is played an octave higher in the second section than the first section. Even though the notes sound similar, they are in a different range, also called a different “register” in music.</td>
</tr>
<tr>
<td><strong>3</strong> <strong>Play</strong> the first section of the recording again, and, while sitting on the floor or a chair, demonstrate the melodic contour with a flag as in lesson 10.</td>
<td><strong>Play</strong> the first section of the recording again, and, from a seated position, demonstrate the melodic contour with a flag as in lesson 10.</td>
</tr>
<tr>
<td><strong>4</strong> <strong>Distribute</strong> a flag of the same color you used (in step 3) to each student, and <strong>play</strong> the first section of the recording again. Have the students mirror your movements using a flag of the same color.</td>
<td><strong>Distribute</strong> a flag of the same color you used (in step 3) to each student, and <strong>play</strong> the first section of the recording again. Have the students mirror your movements using a flag of the same color.</td>
</tr>
<tr>
<td><strong>5</strong> <strong>Distribute</strong> flags to each student of another color, and, while standing to show the change in register, demonstrate the melodic contour in the second part of the music. <strong>Play</strong> the second section of recording and have the students mirror your motions.</td>
<td><strong>Distribute</strong> flags to each student of another color and have the students stand to show the change in register. <strong>Play</strong> the second section of recording, and have the students make up their own motions to show the melodic contour in the second part of the music.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
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</tr>
<tr>
<td>5a</td>
<td><strong>Ask</strong> the students: How did your movements compare with other students' movements? How were they different? How were they the same? How did your movements change to show the change in sound or register? How well did your movements go with the music? How could you improve them?</td>
</tr>
<tr>
<td>6</td>
<td><strong>Tell</strong> students that melodies sound differently when they are in different registers or have different ranges. Explain that some instruments, like the piano in this recording, has a large range that composers sometimes use to change the sound of the music.</td>
</tr>
<tr>
<td>7</td>
<td><strong>Distribute</strong> another flag to each student, <strong>play</strong> the first and second sections of the recording again, and demonstrate the musical registers in the same way using different motions. Have the students mirror your movements. <strong>Tell</strong> students that melodies sound differently when they are in different registers or have different ranges. Explain that some instruments, like the piano in this recording, has a large range that composers sometimes use to change the sound of the music. <strong>Distribute</strong> another flag to each student, <strong>play</strong> the first and second sections of the recording again, and have the students improvise movements using two flags to demonstrate the two musical registers.</td>
</tr>
</tbody>
</table>
Lesson 12
Form in Music

ABI Objectives: Students will listen to the recording, copy the teacher’s demonstrated binary map including a coda, and trace their copy of the map while listening to the recording.

CTI Objectives: Students will recognize and describe sections in the recorded music, create their own maps to represent the different sections of the musical example, evaluate their own and different maps of the same music, compare and contrast different representations of the musical form, and answer in response to the teacher’s questions.

Materials: A recording of Story’s “Pavane,” a large writing tablet or white board with markers, one marker per student, and a piece of drawing paper per student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  <strong>Play</strong> the recording and tell students to listen for places when the music changes.</td>
<td><strong>Play</strong> the recording and tell students to listen for places when the music changes.</td>
</tr>
<tr>
<td>1a</td>
<td><strong>Ask</strong> the students: How did the music change? How many times did the music change? How did you know it changed? Describe what you heard. What might this music be used for? Where might you hear this music? What do you imagine is happening when you hear this music?</td>
</tr>
<tr>
<td>2  <strong>Tell</strong> the students that when composers write music, they often have a purpose and a plan. <strong>Tell</strong> the students that this music was written when the composer was thinking of winter and being alone. Explain that in this music, the composer starts with one part or section; this section is called “Section A” because it is the first part of the piece.</td>
<td><strong>Tell</strong> the students that when composers write music, they often have a purpose and a plan. <strong>Tell</strong> the students that this music was written when the composer was thinking of winter and being alone. Explain that in this music, the composer starts with one part or section; this section is called “Section A” because it is the first part of the piece.</td>
</tr>
<tr>
<td>3 On a large writing tablet or board, draw five boxes. <strong>Play</strong> the first section of the recording again and draw a map of the music in the first box using melodic contours and shapes from lesson 10. Have the students trace your map in the air while you draw on the board or tablet.</td>
<td>On a large writing tablet or board, draw five boxes. <strong>Play</strong> the first section of the recording again and draw a map of the music in the first box using melodic contours and shapes from lesson 10. Have the students trace your map in the air while you draw on the board or tablet.</td>
</tr>
<tr>
<td>4 <strong>Distribute</strong> a marker and a sheet of drawing paper to each student. <strong>Play</strong> the first section of the recording again and have the students copy your map of the music in the first section as it plays.</td>
<td><strong>Distribute</strong> a marker and a sheet of drawing paper to each student. <strong>Play</strong> the first section of the recording again and have the students copy your map of the music in the first section as it plays.</td>
</tr>
<tr>
<td>5 <strong>Tell</strong> the students that the second section of the music is different from the first, so the second box on their paper should be different from the first box.</td>
<td><strong>Ask</strong> the students to listen to the second section of the recording with the following questions in mind: What do you hear in this music? What words would you use to describe it? How does it compare with the other section of music?</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
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<tr>
<td>6  <strong>Play</strong> the second section of the recording, and map it in the second box as you did in the first box. Have the students copy your map on their sheets.</td>
<td>6  <strong>Play</strong> the second section of the recording, and have the students create their own maps of the second section in the second box on their paper.</td>
</tr>
<tr>
<td>7  <strong>Tell</strong> the students that the third section of the music is very similar to the first, so the third box on their paper should be nearly the same as the first box.</td>
<td>7  <strong>Ask</strong> the students to listen to the third section of the recording with the following questions in mind: What do you hear in this music? What words would you use to describe it? How does it compare with the other sections of music?</td>
</tr>
<tr>
<td>8  <strong>Play</strong> the third section of the recording, and map it in the third box. Have the students copy your map on their sheets.</td>
<td>8  <strong>Play</strong> the third section of the recording, and have the students create their own maps of the third section in the third box on their paper.</td>
</tr>
<tr>
<td>9  <strong>Tell</strong> the students that the fourth section of the music is very similar to the second, so the fourth box on their paper should be nearly the same as the second box.</td>
<td>9  <strong>Ask</strong> the students to listen to the fourth section of the recording with the following questions in mind: What do you hear in this music? What words would you use to describe it? How does it compare with the other sections of music?</td>
</tr>
<tr>
<td>10 <strong>Play</strong> the fourth section of the recording, and map it in the fourth box. Have the students copy your map on their sheets.</td>
<td>10 <strong>Ask</strong> the students to listen to the fifth section of the recording with the following questions in mind: What do you hear in this music? What words would you use to describe it? How does it compare with the other sections of music?</td>
</tr>
<tr>
<td>11 <strong>Play</strong> the fifth section of the recording, and map it in the fifth box. Have the students copy your map on their sheets.</td>
<td>11 <strong>Play</strong> the fifth section of the recording, and have the students create their own maps of the fifth section in the fifth box on their paper.</td>
</tr>
<tr>
<td>11a  <strong>Ask</strong> the students: What did you hear at the end of the piece? What made it different from the other parts of the music? How would you compose music to let the listener know the piece was coming to an end?</td>
<td>11a <strong>Tell</strong> the students that in music the ending section of a piece is often called a “coda” because “coda” means, “tail.”</td>
</tr>
<tr>
<td>12 <strong>Tell</strong> the students that in music the ending section of a piece is often called a “coda” because “coda” means, “tail.”</td>
<td>12 <strong>Tell</strong> the students that in music the ending section of a piece is often called a “coda” because “coda” means, “tail.”</td>
</tr>
<tr>
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<td>Critical Thinking Instruction (CTI)</td>
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</tr>
<tr>
<td>12a Have the students to look at their maps of the whole piece and share them with another student or students. Ask the students: What do you notice about your map of the music? How did it compare with another student’s map? What in the music helped you draw your map? How does it show the music? How well does your map show the music? What grade would you give your own map? Why? How could you improve it?</td>
<td>Tell the students that the overall plan or form for this piece is “A B A B Coda” because there are five sections in this piece. The first and third sections are the same, and the second and fourth sections are the same. The final section is similar to but is the ending of the whole piece.</td>
</tr>
<tr>
<td>13 Tell the students that the overall plan or form for this piece is “A B A B Coda” because there are five sections in this piece. The first and third sections are the same, and the second and fourth sections are the same. The final section is similar to but is the ending of the whole piece.</td>
<td>Tell the students that the overall plan or form for this piece is “A B A B Coda” because there are five sections in this piece. The first and third sections are the same, and the second and fourth sections are the same. The final section is similar to but is the ending of the whole piece.</td>
</tr>
<tr>
<td>13a Ask the students: How does this music compare with the two other pieces of music (heard in previous lessons)? What makes them the same? What makes them different? How do the maps or forms of the two pieces of music compare? Why do think they might be different?</td>
<td>Tell the students that this form is different from the form of the other two pieces (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map.</td>
</tr>
<tr>
<td>14 Tell the students that this form is different from the form of the other two pieces of music (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map.</td>
<td>Tell the students that the overall plan or form for this piece is “A B A B Coda” because there are five sections in this piece. The first and third sections are the same, and the second and fourth sections are the same. The final section is similar to but is the ending of the whole piece.</td>
</tr>
<tr>
<td>15 Tell the students that this form is different from the form of the other two pieces of music (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map.</td>
<td>Tell the students that this form is different from the form of the other two pieces (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map.</td>
</tr>
<tr>
<td>16 Play the entire recording again and have the students trace their maps with their finger or marker while the music plays.</td>
<td>Play the entire recording again and have the students trace their own maps with their finger or marker while the music plays.</td>
</tr>
</tbody>
</table>
Lesson 13

Steady beat and meter

ABI Objectives: Students will listen to the recording, mirror the teacher’s movement patterns while using one and two tennis balls to show a steady beat and common-time meter.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe the steady beat and meter in the recorded music, improvise their own movement patterns using one and two tennis balls, evaluate their own improvised patterns, compare their own patterns with patterns improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Satriani’s “Back to Shalla-Bal,” and two tennis balls per student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the first two sections of the recording and tell students to listen for the beat and beat patterns.</td>
<td><strong>Play</strong> the first two sections of the recording and tell students to listen for the beat and beat patterns.</td>
</tr>
<tr>
<td><strong>1a</strong> Tell the students that this music has a “steady beat” like other pieces of music, and the drums play a beat pattern played on every other beat. We count that “1 2 3 4” with beats two and four being louder or stronger while beats one and three are weaker or not accented. In music, the way the beats are organized is called “meter.”</td>
<td><strong>Ask</strong> the students: How would you describe the beat of this music? How do you think the beats are organized? How would you show it? How would you count it? How does the beat of this music make it different than other kinds of music we have studied? How do you know?</td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that this music has a “steady beat” like other pieces of music, and the drums play a beat pattern played on every other beat. We count that “1 2 3 4” with beats two and four being louder or stronger while beats one and three are weaker or not accented. In music, the way the beats are organized is called “meter.”</td>
<td><strong>Tell</strong> the students that this music has a “steady beat” like other pieces of music, and the drums play a beat pattern played on every other beat. We count that “1 2 3 4” with beats two and four being louder or stronger while beats one and three are weaker or not accented. In music, the way the beats are organized is called “meter.”</td>
</tr>
<tr>
<td><strong>2a</strong> Ask the students: What is the speed of this piece? How do you know? Describe it.</td>
<td><strong>Ask</strong> the students: What is the speed of this piece? How do you know? Describe it.</td>
</tr>
<tr>
<td><strong>3</strong> Tell the students that the speed or “tempo,” of this music is constant and does not change.</td>
<td><strong>Tell</strong> the students that the speed or “tempo,” of this music is constant and does not change.</td>
</tr>
<tr>
<td><strong>4</strong> Distribute a tennis ball to each student. <strong>Play</strong> the first two sections of the recording again and demonstrate movements in a “weak-strong-weak-strong” beat patterns to illustrate the meter using a tennis ball (e.g. bouncing, tapping, tossing, etc.). Have the students join you as your mirror.</td>
<td><strong>Distribute</strong> a tennis ball to each student. <strong>Play</strong> the first two sections of the recording again and demonstrate movements in a “weak-strong-weak-strong” beat patterns to illustrate the meter using a tennis ball (e.g. bouncing, tapping, tossing, etc.). Have the students join you as your mirror.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
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</tr>
<tr>
<td>5. <strong>Play</strong> the first two sections of the recording again and using different movement patterns with a tennis ball. Have the students join you as your mirror.</td>
<td><strong>Play</strong> the first two sections of the recording again and have the students improvise their own movement patterns with a tennis ball to show the music's meter. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
<tr>
<td>5a. <strong>Ask</strong> the students: How would you describe the movements you made up with the tennis ball? How well did your patterns go along with the music? How did your movement using the tennis balls fit with the rhythm of the music? How did your movement patterns compare with patterns other students improvised? How might you change your patterns? Why might you change your patterns?</td>
<td><strong>Tell</strong> students that the movement patterns with the tennis ball went along with the strong and weak beats in the music, and that the tempo of the music was the same as the tempo of the movement with the tennis balls.</td>
</tr>
<tr>
<td>6. <strong>Tell</strong> students that the movement patterns with the tennis ball went along with the strong and weak beats in the music, and that the tempo of the music was the same as the tempo of the movement with the tennis balls.</td>
<td>Distribute another tennis ball to each student. <strong>Play</strong> the first two sections of the recording again, have the students make up their own movement patterns using two tennis balls along with the steady beat and constant tempo. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
<tr>
<td>7. <strong>Distribute</strong> another tennis ball to each student. <strong>Play</strong> the first two sections of the recording again, and lead the students in different movement patterns using two tennis balls. Have the students follow along with the steady beat and constant tempo.</td>
<td><strong>Play</strong> the first two sections of the recording again, and have the students make up their own movement patterns using two tennis balls along with the steady beat and constant tempo. Pause the recording, invite students to take turns leading the class, and resume the recording.</td>
</tr>
</tbody>
</table>
Lesson 14

Melodic Phrases (Question and Answer)

ABI Objectives: Students will listen to the recording, mirror the teacher’s demonstrated movements in melodic phrases, and perform those movements with flags.

CTI Objectives: In addition to the ABI objectives, students will recognize and describe melodic shapes and contours by listening for phrases in the musical example, improvise conducting motions to show melodic contours, evaluate their own improvised motions, compare their own motions with motions improvised by other students, and answer in response to the teacher’s questions.

Materials: A recording of Satriani’s “Back to Shalla-Bal,” and a conductor’s baton for each student.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the first two sections of the recording and tell students to listen for what shapes and patterns they hear in the melody.</td>
<td>Play the first two sections of the recording and tell students to listen for the shapes and patterns they hear in the melody.</td>
</tr>
<tr>
<td><strong>1a</strong> Ask the students: How would you describe the melody? How would you show it? What parts make up the melody? How many sections of the melody do you hear?</td>
<td><strong>1a</strong> Tell the students that this music has a melody that is made up of phrases or musical thoughts. In this music, there are alternating phrases that are like “a question and an answer when two people are talking.”</td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that this music has a melody that is made up of phrases or musical thoughts. In this music, there are alternating phrases that are like “a question and an answer when two people are talking.”</td>
<td>Tell the students that this music has a melody that is made up of phrases or musical thoughts. In this music, there are alternating phrases that are like “a question and an answer when two people are talking.”</td>
</tr>
<tr>
<td><strong>3</strong> Demonstrate the question and answer phrases in the music using a conductor’s baton and alternating hand motions.</td>
<td>Demonstrate the question and answer phrases in the music using a conductor’s baton and alternating hand motions.</td>
</tr>
<tr>
<td><strong>4</strong> Distribute a conductor’s baton to each student, play the first two sections of the recording again, and have the students mirror your conducting using alternating hand motions.</td>
<td>Distribute a conductor’s baton to each student, play the first two sections of the recording again, and have the students mirror your conducting using alternating hand motions.</td>
</tr>
<tr>
<td><strong>5</strong> Play the first two sections of the recording again, use different conducting motions to show the question and answer phrases, and have the students mirror your conducting using alternating hand motions.</td>
<td>Play the first two sections of the recording again, have the students improvise their own conducting motions to show the question and answer phrases using alternating hand motions.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
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</tr>
<tr>
<td>5a</td>
<td>Ask the students: How well did your motions show the melody? How many parts did your motions have? How did the parts fit together? What made them different? How did your motions compare with motions other students improvised? How might you change your motions? Why?</td>
</tr>
<tr>
<td>6</td>
<td>Tell students that melodies have lines and shapes and are made up of phrases. Explain that phrases are like musical thoughts, and that composers sometimes write music to sound like a conversation between two people or a set of questions and answers.</td>
</tr>
<tr>
<td>7</td>
<td>Play the first two sections of the recording again and have the students mirror your conducting motions to show the question and answer phrases using alternating hand motions.</td>
</tr>
</tbody>
</table>
Lesson 15
Instrumental Timbres

ABI Objectives: Students will listen to the recording and mirror the teacher’s demonstrated movements while using colored flags.

CTI Objectives: In addition to the ABI objectives, students will describe different instrumental timbres and in the musical example, demonstrate their understanding with teacher-directed and improvised movements using colored flags, and answer in response to the teacher’s questions.

Materials: A recording of Satriani’s “Back to Shalla-Bal,” and a set of multicolored flags.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the first two sections of the recording and tell students to listen for different instruments in the music.</td>
<td>Play the first two sections of the recording and tell students to listen for different instruments in the music.</td>
</tr>
<tr>
<td><strong>1a</strong> Ask the students: What did you notice about the kinds of sounds the instruments made? What do you think the instruments were? How were the sounds different from each other? How were they the same? Describe what you heard.</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> Tell the students that different instruments make different kinds of sounds or “timbres.” Explain that in this music, there are three different instruments playing: electric bass, electric guitar, and drums.</td>
<td>Tell the students that different instruments make different kinds of sounds or “timbres.” Explain that in this music, there are three different instruments playing: electric bass, electric guitar, and drums.</td>
</tr>
<tr>
<td><strong>3</strong> Play the first two sections of the recording again, and using a colored flag, demonstrate the electric guitar line. Have the students listen for the electric guitar and mirror your movements (without using flags).</td>
<td>Play the first two sections of the recording again, and using a colored flag, demonstrate the electric guitar line. Have the students listen for the electric guitar and mirror your movements (without using flags).</td>
</tr>
<tr>
<td><strong>4</strong> Distribute a flag to each student of the same color you used (in step 3), play the recording again, and have the students mirror your motions.</td>
<td>Distribute a flag to each student of the same color you used (in step 3), play the recording again, and have the students mirror your motions.</td>
</tr>
<tr>
<td><strong>5</strong> Play the first two sections of the recording again, and using a different colored flag, demonstrate the electric bass line. Have the students get a flag the same colored you used, listen for the bass and mirror your movements.</td>
<td>Play the first two sections of the recording again, and have the students pick a different instrument, a different colored flag, and improvise their own motions to show the line of that instrument.</td>
</tr>
<tr>
<td>Activity-Based Instruction (ABI)</td>
<td>Critical Thinking Instruction (CTI)</td>
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</tr>
<tr>
<td><strong>6</strong></td>
<td>Play the first two sections of the recording again, and using a different colored flag, demonstrate the drum line. Have the students get a flag you used, listen for the drum and mirror your movements.</td>
</tr>
<tr>
<td><strong>6a</strong></td>
<td></td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Tell the students each of the three instruments fits in the music by playing its own part.</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>Play the first two sections of the recording again, and, using colored flags as before, demonstrate the three instrumental lines in sequence: electric bass, electric guitar, and drums. Have the students mirror your movements.</td>
</tr>
</tbody>
</table>
Lesson 16
Form in Music

ABI Objectives: Students will listen to the recording, copy the teacher’s demonstrated illustration, and trace their own illustration of the musical form while listening to the recording.

CTI Objectives: Students will recognize and describe sections in the recorded music, create their own maps to represent the different sections of the musical example, evaluate their own and different maps of the same music, compare and contrast different representations of the musical form, and answer in response to the teacher’s questions.

Materials: A recording of Satriani’s “Back to Shalla-Bal,” a large writing tablet or white board, a set of multicolored markers, and drawing paper.
<table>
<thead>
<tr>
<th>Activity-Based Instruction (ABI)</th>
<th>Critical Thinking Instruction (CTI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Play the recording. <strong>Tell</strong> students to listen for places when the music changes and how many times they hear it change.</td>
<td>Play the recording. <strong>Tell</strong> students to listen for places when the music changes and how many times they hear it change.</td>
</tr>
<tr>
<td><strong>1a</strong></td>
<td>Ask the students: When did you notice the music changed? How many times did the music change? How did you know it changed? Describe what you heard. Where might you hear this music? What does this music remind you of?</td>
</tr>
<tr>
<td><strong>2</strong> <strong>Tell</strong> the students that when composers write music, they often have a purpose for the music and plan it out. <strong>Tell</strong> the students that this music is usually heard at a rock concert. Explain that in this music, the composer starts with one part or section; this section is called “section A” because it is the first part of the piece.</td>
<td><strong>Tell</strong> the students that when composers write music, they often have a purpose for the music and plan it out. <strong>Tell</strong> the students that this music is usually heard at a rock concert. Explain that in this music, the composer starts with one part or section; this section is called “section A” because it is the first part of the piece.</td>
</tr>
<tr>
<td><strong>3</strong> On a large writing tablet or board, draw three boxes. <strong>Play</strong> the recording again and draw a map of the music in the first box using melodic contours and shapes from lesson 14. Have the students trace your map in the air while you draw on the board or tablet.</td>
<td>On a large writing tablet or board, draw three boxes. <strong>Play</strong> the recording again and draw a map of the music in the first box using melodic contours and shapes from lesson 14. Have the students trace your map in the air while you draw on the board or tablet.</td>
</tr>
<tr>
<td><strong>4</strong> Distribute a marker and a sheet of drawing paper to each student. <strong>Play</strong> the recording again and have the students copy your map of the music in the first box.</td>
<td>Distribute a marker and a sheet of drawing paper to each student. <strong>Play</strong> the recording again and have the students create their own maps of the music in the first box.</td>
</tr>
<tr>
<td><strong>5</strong> <strong>Tell</strong> the students that the next section of the music is different from the first, so the second box on their paper should be different from the first box.</td>
<td>Ask the students to listen to the second section of the recording with the following questions in mind: What do you hear in this music? How would you describe it? How does it compare with the first section of music?</td>
</tr>
<tr>
<td><strong>6</strong> <strong>Play</strong> the second section of the recording, and map it in the second box. Have the students copy your map on their sheets.</td>
<td><strong>Play</strong> the second section of the recording, and have the students create their own maps of the second section in the second box on their paper.</td>
</tr>
<tr>
<td><strong>Activity-Based Instruction (ABI)</strong></td>
<td><strong>Critical Thinking Instruction (CTI)</strong></td>
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| **7**  
Tell the students that the third section of the music is similar to the first section, so the third box on their paper should look similar to the first box. | **Ask** the students to listen to the third section of the recording with the following questions in mind: What do you hear in this music? How would you describe it? How does it compare with the other sections of music? |
| **8**  
Play the third section of the recording, and map it in the third box. Have the students copy your map on their sheets. | **Play** the third section of the recording, and have the students create their own maps of the third section in the third box on their paper. |
| **8a**  
Have the students to look at their maps of the music and share them with another student. **Ask** the students: What do you notice about your map of the music? How did it compare with another student's map? What in the music helped you draw your map? How well does your map show the music? What grade would you give your own map? Why? How could you improve it? |  |
| **9**  
Tell the students that the overall plan or form for this piece is A B A' because there are three sections in this piece and the first and third sections sound almost the same. **Tell** the students that this form is different from the forms used in other pieces of music but similar to other pieces (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map. | **Tell** the students that the overall plan or form for this piece is A B A' because there are three sections in this piece and the first and third sections sound almost the same. **Tell** the students that this form is different from the forms used in other pieces of music but similar to other pieces (heard in previous lessons). Explain that different kinds of music have different forms and will look different on a musical map. |
| **10**  
Play the entire recording again and trace your map on the board or tablet. Have the students trace their maps with their finger or marker while the music plays. | **Play** the entire recording again and have the students trace their own maps with their finger or marker while the music plays. |
REFERENCES


